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FIVE PLATES, WITH THREE FIGURES AND CHARTS IN THE TEXT

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SOME CLINICAL OBSERVATIONS UPON THE TEMPERATURE OF PHTHISIS, BASED UPON EXPERIENCE OF ONE HUNDRED CONSECUTIVE CASES TREATED BY OPEN-AIR METHODS

By DAVID LAWSON, M.A., M.D. (Ed.),
Senior Physician of Nordrach-on-Dee Sanatorium, Banchory, Scotland

IT is in the full knowledge of the very dubious mental attitude adopted towards the sanatorial method of treating phthisis, which characterises a large proportion of the medical profession in Scotland, and of the expressed willingness of many whose old faiths have become shaken, and whose new beliefs are not yet crystallised, to weigh and consider clinical evidence when adduced, that this paper has been written.

For the purpose of lucidity the following facts have been grouped around a central point, viz., the temperature of phthisis.

Now in order to illustrate the various conditions as they arise for consideration, two kinds of charts will be used, viz., (*a*) daily ; (*b*) average chart (fig. 1). Only the latter calls for explanation. It was designed by Chapman and first used in his Sheffield work. Its purpose is to give a bird's-eye view of the variation in temperature, weight and sputum in a case over a period of months. It is made on the metrical system. The average of the highest point obtained on four consecutive days is taken and indicated by a dot. The lowest point touched is similarly treated. There is thus obtained a series of points at a high level which are joined by a line. Similarly a series of points at a low level which are also connected. The inter-

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vening space is then filled in. This then gives (1) the average highest point; (2) the average lowest point; (3) the average amplitude of the temperature.

The 2nd chart exhibits in a typical manner the behaviour of the temperature in an ordinary case of fibro-caseous tuberculosis which is running a favourable course. But it shows more than that. It furnishes an illustration of what may be regarded as a *fundamental rule*, viz., that progress towards arrest in an active lesion is characterised by well-marked clinical phenomena which appear and are maintained simultaneously. These phenomena are as follows:—

(1) Weight is gained.
(2) Pulse rate falls.
(3) Respiration rate falls.
(4) Temperature falls by lysis, and
(5) Diminishes in amplitude (not so in miliary cases).

In this particular instance, that of acute fibro-caseous tuberculosis in a male of twenty-two years of age, the treatment extended over a period of six months. During that time the approximate fall per minute in the pulse was from 95 to 78, in the respiration from 23 to 13; the temperature was diminished in amplitude by almost one degree centigrade, and the net gain in weight obtained amounted to 17 lbs.

In contra-distinction to that favourable view, chart No. 31 exhibits the leading features of a similar case which is running an adverse course. It is noticeable that here, along with a steady declension of the body weight, there was a marked failure in the temperature, either to fall in height or diminish in amplitude of range.

. But if it is certain that for the patient's welfare those clinical features which have been described should be present in combination, it is equally certain that any marked deviation from their association together suggests good grounds for apprehension so long as that deviation persists. Thus I have seen, on more than one occasion, death occur after a considerable gain in weight had been acquired.

In the case to which the next chart (No. 4) refers, the record of one week is shown. During this week, although the patient's condition was a critical one, he nevertheless gained 5 lbs. in weight, and within a few days of death actually

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weighed over 12 lbs. heavier than when he first came under observation. Thus, notwithstanding the fact that the patient was gaining weight and to that extent appeared to be improving, he was in reality losing ground.

In the case to which chart No. 5 refers, the force of the observation that deviation from the general rule is of unfavourable import, is even more marked than it is in this one. Here, as you will observe, not only a gain in weight, but a fall in temperature was recorded. And yet the tendency was downwards. The favourable prognosis which the condition of the weight and temperature readings at first sight seemed to suggest were not supported by other elements in the case. The presence here of Ehrlich's Diazo reaction in the urine was an extremely unwelcome factor.

I may say in passing that my experience of the presence of this reaction goes to support the view which is generally held of its unfavourable import. Of three cases in which I have recently known it to be present, two have died, and the condition of the third, at present under treatment, is an extremely critical one.

Passing now to consider the temperature of phthisis, it has been observed that it is characterised by two qualities :—

(1) Inelasticity. (2) Instability.

By inelasticity I mean that tendency which temperature exhibits when disturbed by any exciting cause to remain in the altered condition after the disturbing factor has been withdrawn.

This is well illustrated on chart No. 6, which indicates the levels at which the temperatures of three different persons stood taken one hour after exercise. The temperatures rose approximately to the same height. When, however, an hour's rest had been taken, whilst the temperature of the patient with the active lesion had remained almost stationary, and that of the patient with the nearly-arrested lesion had fallen fully half a degree, that of the healthy person had fallen over 2° F.

By *instability* I mean a marked sensitiveness to reaction, an extreme liability to become disturbed in the presence of apparently trivial influences, influences so slight that they produce practically no effect upon the temperature of a healthy person. Among those may be cited slight derangements of

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the digestive or nervous systems, or marked variations in the temperature of the surrounding atmosphere.

Chart No. 7 shows respectively the rise in temperature following a sudden unexpected visit of patient's mother, a rise of temperature of gastric origin which promptly yielded to the action of small doses of calomel, and temperatures due to the condition of the surrounding atmosphere. In the case of the last record here, it is noteworthy that on those days on which the temperature of the patient did not rise so high, the temperature of the atmosphere was also lower than on the other days.

During the hot weather of last July, I found the temperature readings at midday more or less disturbed uniformly over the whole forty patients under observation at that time. In some cases the rise that took place reached as high as 103·5° F., and in two cases 104° F. was touched. The rise was, of course, transitory. I could not account for it in any other way than that which has been suggested.

Method of taking Temperature.

It is not my intention to detain you with one's experience of the various methods of recording temperature readings, further than to refer to the urinary and rectal methods. The employment of the urinary method which necessitates the use of a very sensitive instrument—not exceeding thirty seconds—is strongly advocated in certain continental circles. It is claimed that the urine coming as it does from the region of the hottest organ in the abdomen, viz., the liver, ought on that account to show a higher and more sensitive reading than can be obtained by other methods. But for all practical purposes I have not found it so; and am of opinion that the æsthetic and prudential objections to its use far outweigh in importance any visionary advantages which it may be thought to possess.

It has been my good fortune to meet with several patients whose interest in science, we shall not call it curiosity, was such that of their own accord they put the claims of those who advocate the employment of this method to the test. In the next two charts you will see the record of two sets of observations which were made by a patient in which the temperature was taken simultaneously by rectal, urinary, oral,

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and axillary methods. That man was a student and an enthusiast. Imagination will best picture his attitude whilst engaged in this engrossing research. The former (No. 8) represents the various temperatures taken after the patient had taken a measured amount of exercise, the latter (No. 9) those of rest. In both the urinary curve occupies an intermediate position between the rectal and oral readings, and its relationship to them is fairly constant.

Many hard things have of late been said of *rectal temperatures*. Nevertheless, after an extended trial of all the methods, I am firmly of opinion that the rectal method of taking temperatures is incomparably more reliable and better than any other, and should be adopted in every case of pulmonary phthisis. I say in every case, but of course exception must be made in those cases which are complicated by the presence of hæmorrhoids, ischio-rectal abscess, anal fissure and such local disturbances. An undue importance has been attached to the æsthetic objection. To those who urge it I can only remark that I have not yet met with a single patient, male or female, who, when the bearing of the matter had been frankly explained to him or her, and the decision left in that patient's hands, the patient did not adopt the rectal method.

Personally, I recommend every patient who comes under my care always to take their temperature by the rectal method.

Its advantages, which are very real, are as follows :—

(1) It is not so liable as the mouth to be disturbed by external conditions, such as "cold drinks, mouth breathing, etc."

(2) In some cases of *genuine relapse* the rise in temperature appears in the rectum *some time before* it gives any indication elsewhere. The difference in time may amount to as much as twelve hours. This early indication enables the physician in charge to recognise and therefore to treat the disturbance at an earlier stage than if he had depended for guidance upon the axillary or oral readings.

(3) *The rectal temperature rises higher both relatively and absolutely* at such times than it does elsewhere. A reference to chart No. 9 illustrates this point. It is therefore more likely to attract notice and direct attention towards the

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disturbance than the smaller rise which the oral reading would show.

(4) *The rectal temperature is disturbed by trivial factors*, such as slight indigestion and nervous causes, which often do not affect the axillary range. Even these trifling irregularities are best dealt with early ; and this, by directing the physician's attention to the matter, the rectal reading procures.

(5) But it is when we begin to deal with the question of when to begin and how to regulate a patient's exercise that the great value of rectal readings is seen.

In deciding the fine point as to when a patient should begin exercise, after a long period has been spent in bed, the decision frequently turns upon the state of the temperature range. In some of these cases the axilla as a guide is quite worthless, and the mouth nearly so. Here the rectal guide will invariably be found reliable.

In view of those clearly established advantages, and I am satisfied from close and careful observation that they are clearly established, I cannot too strongly urge the more general adoption of the rectal method in all cases of pulmonary tuberculosis.

But if the case made out for a more general adoption of the rectal method of taking temperature is a strong one, that which calls for *more regular, frequent, and systematic readings than are usually kept is even stronger.* Meeting as one has done from time to time with errors in diagnosis, and therefore of treatment and prognosis directly traceable to imperfect temperature readings, one feels that some protest is called for against the casual and airy methods of private practice. It is customary for the physician in attendance to take the temperature of the patient at the time of his visit. This visit, if a a daily one, may take place at very different hours on different days. Now since the temperature of a healthy person wanders over a considerable range—somewhere exceeding 1° F.—in the course of twenty-four hours, and that of a tuberculous patient over an even larger range, it is evident that readings which differ very widely from each other may thus be obtained, and that without any change having taken place in the patient's condition. From the ignorance of this fact I have known a variety of mistakes to be made, many of them serious mistakes. Some of these are illustrated in the following charts :—

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Chart No. 10 represents a case which was at first mistaken for one of typhoid fever. Widal's reaction having proved negative, tuberculosis was suspected, and a four-hourly chart then kept. The right hand side of the chart shows the typical tuberculous record which was thus obtained, and enabled a definite diagnosis of tuberculosis to be made—a diagnosis, the correctness of which time abundantly confirmed. The suggestion naturally arises, that if a four-hourly chart had been kept from the first, the tuberculous nature of the disturbance would have been at once recognised, and so valuable time saved. In this case the absence of sputum increased the difficulty of arriving at a definite opinion.

Chart No. 11 shows a case where a doctor, calling in the vicinity of 10 A.M. and 10 P.M., found the temperature practically normal, and erroneously inferred that the case was an apyrexial one.

Chart No. 12—taken from Fowler and Godlees' work, p. 326—represents an inverse temperature which could never have been recognised by a daily forenoon visit or even a night visit, or both together. The temperature taken at those times would have been comparatively low, and the serious nature of the mischief might in this way have remained unsuspected.

In view of such evidence I cannot but feel that as an aid to diagnosis, and to a less extent to prognosis, the usual custom of trusting to one reading is not merely unreliable, but in a number of cases positively useless. In every case of pulmonary phthisis which is sufficiently serious to require the attention of a medical man, and every early case comes under that category, the temperature ought to be taken and recorded at least four times daily. The nurse, or patient, can be taught to take it herself and a record should be kept. The charts should then be placed in the hands of the doctor as he calls from day to day. If this is not done the value and soundness of his advice must necessarily at times very materially suffer.

Temperature in relation to exercise is a much more complicated and intricate one than we have hitherto been asked to believe. It has been customary to assume without cavil the truth of the two following dicta :— .

Firstly.—That exercise always causes a rise of temperature in the tuberculous subject.

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Secondly.—That a temperature of 98·6° F. at 8 A.M. contra-indicates exercise.

Now, whilst those statements are for the most part true, they are open to so many exceptions that I think the position calls for restatement from the commencement.

The restatement which I now venture to submit is as follows:—

The effect of exercise upon a tuberculous subject is twofold.

(1) Exercise depresses temperature.

(2) Exercise raises temperature.

You will readily recognise in this chart No 13 the typical subnormal range of temperature present in an ordinary case of chronic fibroid phthisis. Previous to this point the patient was kept at rest, and as you see the temperature stood practically about normal. Under 1¼ mile walk the temperature fell a whole degree C., and when again that exercise was discontinued the temperature rose again to the level at which it at first stood. I have no doubt that the low temperature in this case represented a temperature of exhaustion, brought on by the exercise small in amount though it was. It is an example of exercise producing fall in temperature.

But the next (chart No. 14), that of a fibro-caseous type with distinct cavity formation present, calls for somewhat fuller notice.

The patient, chiefly out of respect for the time-honoured view that a morning temperature of 98·6° contra-indicates exercise, was put upon a full diet and kept entirely at rest, until at the end of eight weeks it was found she had gained over twenty pounds in weight. Now, notwithstanding the gain in weight which had taken place, no improvement was manifest in her temperature. The 8 A.M. as before remained at 98·6°. At this stage a very careful physical examination was once more made, and the whole case completely investigated in all its bearings. As a result of this step it was resolved to respect the ties of custom no longer and to begin exercise at once. Exercise was accordingly begun, and steadily and gradually increased until a distance of four miles was being covered daily before lunch. From this point onwards, not a little to my surprise, very marked improvement became manifest all round;

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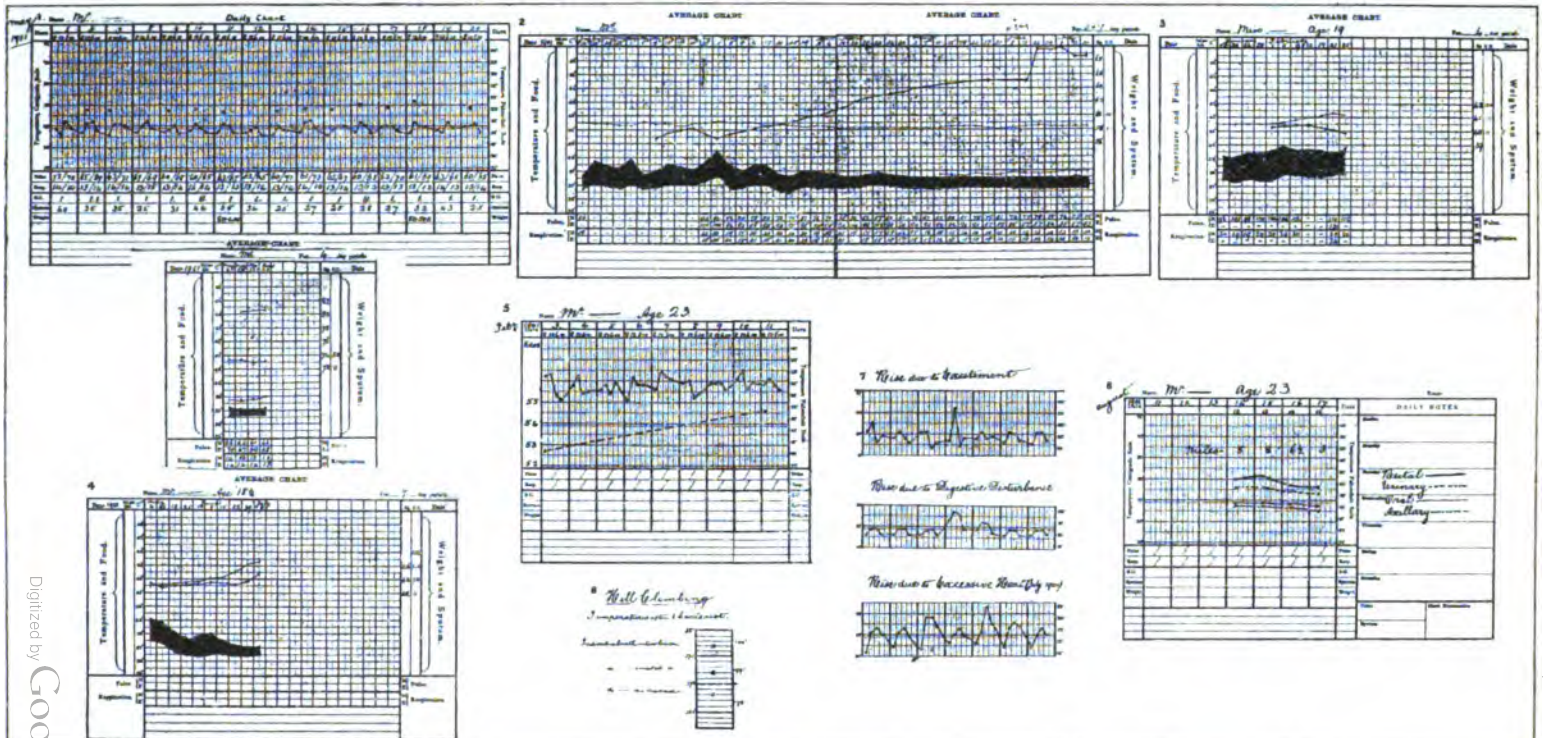

PLATE I. To Illustrate Dr Lawson's Paper

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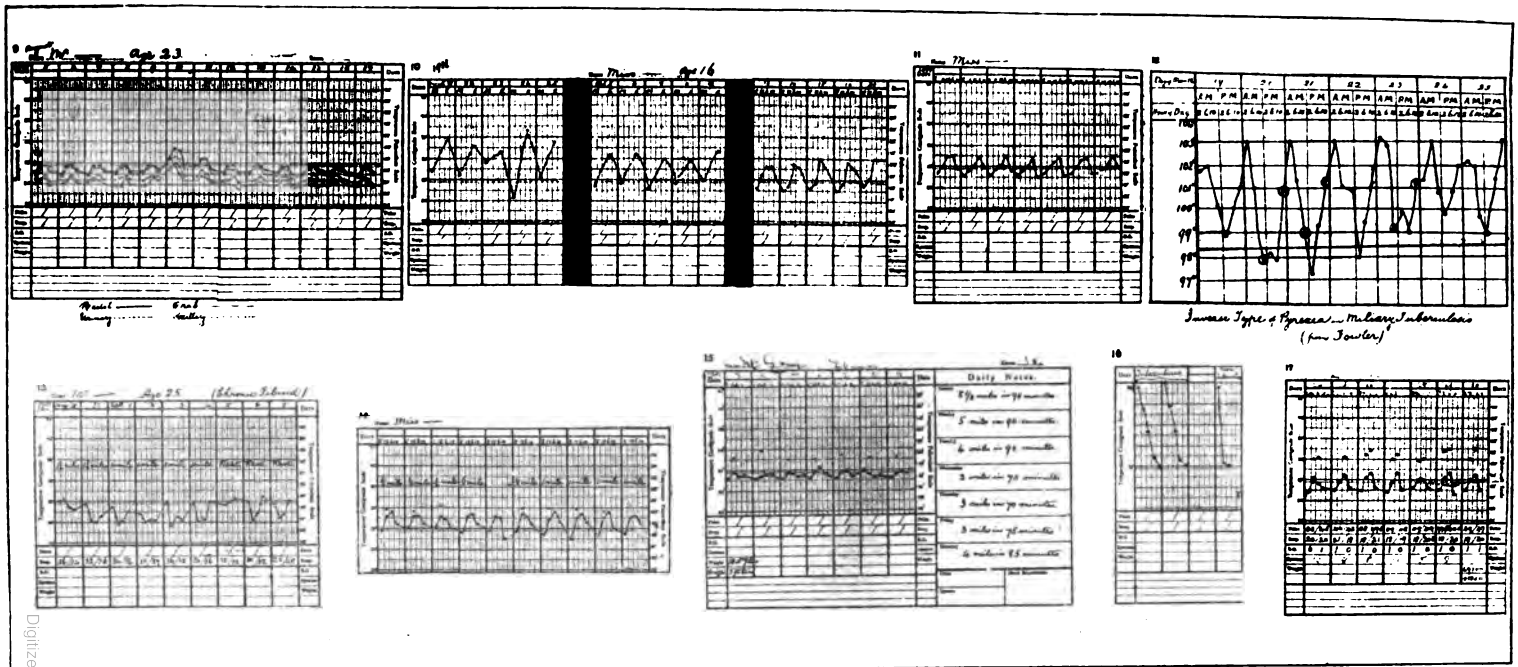

PLATE II. To Illustrate Dr Lawson's Paper

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and in no direction was the change for the better which took place more manifest than in the temperature. It fell almost at once; and the improvement in this respect proved to be a permanent one.

This is a case which puzzled me not a little at the time, and I have seen others like it since then. It exemplifies the danger there is in trusting to hard and fast rule, and the great necessity for individual consideration of each separate case.

The second proposition, viz., that exercise raises temperature, hardly calls for illustration. It is the general experience, and may be seen in three out of four cases.

However, for completeness, chart No. 15, illustrating the point, has been inserted.

But of infinitely more importance than the extent of the rise in temperature produced by exercise, is a characteristic of that rise which I believe was first recognised by Bardswell. Already briefly alluded to as the "inelasticity of tuberculous temperature," it now calls for more detailed consideration.

Chart No. 16 shows the behaviour of a temperature produced by exercise in a tuberculous subject. It also shows a similar degree of temperature produced in myself, a healthy subject, and produced in a similar manner. By contrasting the behaviour of the healthy with that of the tuberculous temperature, you will the more fully appreciate the striking nature of the characteristic which is referred to.

After rest was resumed the temperature of the tuberculous person began to fall, and it did so slowly. It fell ·1° C in 15 minutes; a further ·2° C in 30 minutes; and at the end of 60 minutes it had fallen ·9° C. Yet the temperature of the healthy person fell as much in 15 minutes as that of the patient did in 60 minutes.

Now this feature of the tuberculous temperature, this tardy return to normal after exercise, is one the importance of which it is difficult to overestimate. For in it we have an indication of great value, enabling us to determine the amount of exercise it is desirable to prescribe in any given case. If the exercise taken has not transgressed the limits of beneficial exercise, the temperature will invariably fall to 37°C., or within 3 points of it, during the next hour. Should it fail to do so then, there are good grounds for caution. Next day a

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diminution either in the amount or in the pace at which the exercises is taken should be advised.

This feature, it is claimed, is characteristic of the tuberculous temperature, and as a guide enabling one to regulate within the limits of safety and benefit the exercise prescribed, is invaluable.

My experience abundantly supports that claim which has been made.

There is a statement dealing with this subject which has been much in evidence during the past two years. It is to be found in the pages of nearly every recent medical book which deals with lung diseases, and it has on not a few occasions seen the light in daily papers which purport to guide the public in matters medical. The statement was made in Germany, and need not on that account be accepted without inspection. The statement is to the effect that should a person's temperature, taken immediately after exercise, exceed 100·4° F., then the limits of beneficial exercise have been passed, and he should remain absolutely at rest during the remainder of the day.

Chart No. 17 is one of many which could be produced showing that such is not the case.

At the time those records were being kept, the patient's temperature was daily materially exceeding the restriction which that dictum seeks to impose. As you will observe, it occasionally touched not 100·4° F., but 101·4° F. And still the patient's progress was, and still continues to be, most satisfactory in every respect.

My experience does not accord with those who urge this statement. Indeed it is diametrically opposed to it. I believe that the altitude of temperature rise is really a matter of very minor importance. My own temperature rises to 101·6° after a smart five mile walk, and I shudder to contemplate the altitude it must sometimes have attained in football days. The really crucial question to ask is not "How high does the temperature rise?" but rather, "How long does it remain there when it has risen?" Where only a slight rise in temperature has taken place, if that rise is maintained for two, three, or four hours, then we are safe in assuming that the limits of beneficial exercise have been passed. On the other hand, exercise which produces a temperature

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far exceeding 100·4° F. may prove most beneficial, provided always that a proper return to the vicinity of normal has taken place within the prescribed hour.

So thoroughly satisfied are we now with the accuracy and value of this observation, that it is daily utilised in our régime. It is a matter of routine that patients returning from exercise at twelve o'clock are required to take their temperature at once. After an hour's rest the temperature is again taken at one o'clock before going to lunch, in order to ascertain what fall has taken place. Upon the character of the information vouchsafed by these readings largely depends the nature of the advice which is given regarding their future movements for the day.

What, then, it may be asked, is the practical bearing of these observations upon treatment? *Firstly*, the rectal method of taking temperature should be more generally adopted. *Secondly*, more frequent and systematic records of temperature readings should be kept than at present obtains. *Thirdly*, the custom which proscribes further exercise where a temperature of 100·4° has been recorded, is useful in a large number of cases, but its application as a rule to all cases is discredited. *Fourthly*, an attempt to carry out any phase of the treatment by fixed regulations and rules must frequently end in disaster. *Fifthly*, the too common tendency to consider the lungs only must be discouraged. The examination of the chest must be thorough; but the condition of the various organs and their excreta, together with the light which systematic laboratory investigations throw upon them, is hardly less important. All those elements must be thoroughly weighed and pondered in considering the treatment of any case of phthisis. Only when this is done, can we reasonably hope for the best results in treating our tuberculous patients.

Coming now to consider the practical bearing of those observations as they affect treatment, one is tempted to ask what part should the condition of the temperature play in guiding us as to what to advise. The answer must be that while of great value, probably of more value than any other sign, it is not altogether safe to trust temperature indications entirely. In the majority of cases the general rule holds good, and a rectal temperature of 98·6 at 8 A.M. contra-indicates

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exercise. But in the residuum of cases which do not come under that category, I have frequently found it an extremely difficult point to decide when exercise should be commenced. The pulse gives indications of some value, a value which I believe upon the whole has in some quarters been over-estimated. No single sign may be trusted, be it the weight, the pulse, or the temperature. An all-round view of the case with its physical signs and symptoms should be taken, and in interpreting these aright the experience of the medical adviser counts for much. Anyone who has attempted to work at this subject must feel the difficulties of the task, and in the circumstances the formulating of hard and fast rules for treatment is to be deprecated. That the time for conducting any phase of the treatment on rigid lines and by fixed regulations has passed away, is abundantly clear. Whether it be in the dieting, the drugging, or the exercising of our patients, individualising is essential, and the more conscientious, careful, and complete is the nature of the examination, not only of the lungs, but of the various other organs of the body, and the more thorough and minute are the investigations into the condition of the various secretions and excreta, and the clearer the light which the operations of the laboratory brings to bear upon those facts, the more likely will the physician in charge be able to advise his patient to the best advantage.

A NEW METHOD OF RAPIDLY PREPARING HISTOLOGICAL SPECIMENS

By W. RAMSAY SMITH, M.B., C.M., B.Sc.Ed.,

President of the Central Board of Health, and Permanent Head of the Health Department of South Australia, formerly Pathologist to the Adelaide Hospital

WHEN new fields of investigation prompt one to fresh efforts; when the luxuries of laboratories and their adjuncts are all awanting; when the paraffin process is tried by a temperature of 113° F. in the shade; when microtomes, therefore, become matters of catalogue and useless furniture; when pathological processes are quickened many-fold; when the number of interesting specimens is practically unlimited, while the means of

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preserving them are greatly restricted; when results are required forthwith; and when accurate evidence is all important in matters affecting medicine, surgery, public health, water supplies, stock; it is then indeed that necessity gives birth to invention.

What an investigator wants, be he the fortunate possessor of a fully-equipped laboratory or a country practitioner with the barest necessaries for his practice, is a method that will enable him to examine a specimen quickly and accurately; that will yield him any number of sections he may wish; that will allow him to make his preparations permanent for the purpose of reference and study; and that will at the same time be easy and inexpensive.

For four years or thereabout I have been employing the method described below, being driven to it, in the first instance, of necessity, and continuing to employ it by preference on account of the satisfactory nature of the results it yielded. I have examined hundreds of specimens of animal tissues of all descriptions, and made several thousand preparations from specimens in all stages of preservation; and I have not yet found the method to fail, not even in cases where every other method in common use has proved unsuccessful.

Briefly, it is a new method of cutting sections by means of the Cathcart microtome; and it is at the request of my friend, the inventor of the instrument, who saw the method when in Adelaide and the sections prepared by it, that I write this communication on the subject.

No mechanical work can be so easily learned from books or from written descriptions as from practical demonstration; but I think that the method I wish to describe is as easily learned as any other. The following directions will help, as a lesson, to explain the *rationale* of the method, and form an introduction to its various applications.

Take a piece of liver or kidney that has been in a solution of formaline for a few days. Cut a block about three-eighths by three-eighths by five-eighths of an inch in size. Press it gently between the folds of a towel to remove the surplus solution from it. Split the cork of a ten or twelve ounce dispensing bottle lengthwise. Put the block of liver or kidney between the pieces lengthwise, with the end projecting a quarter of an inch beyond the thick end of the cork. Place the cork

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in the clamp in such a position that its top is flush with the top of the cylinder, the clamp just holding it. Take a tube of chloride of ethyl. Direct a spray from it against the top and sides of the block of tissue projecting beyond the cork and on the upper parts of the exposed surfaces between the pieces of cork. Now commence to tighten the clamp gradually. As the tissue freezes, and the screw is tightened, the block will become quite hard and immovable. Take a carpenter's plane iron, mounted in a wooden handle or not. Place the edge of this on the runners and screw down the cylinder with the cork until the top of the tissue to be cut just touches the plane's edge. Now with a slow continuous motion of the screw bring the tissue up, at the same time moving the plane iron swiftly to and fro over the tissue. The sections will accumulate on the plane iron or fall on the cork or over the cylinder, and may be lifted by a needle into a dish of water. If the plane iron is put in the water sweep both sides of it against a towel before resuming cutting with it. The tissue should be cut just on the thaw when the section appears neither too white and stiff (over frozen), nor mealy (too little frozen), nor sloppy (too much thawed). Now and then, if many sections are wanted, stop for a few seconds and re-apply the spray to the block of tissue.

The sections may now be stained and mounted after any manner desired. I usually employ the following method for ordinary tissues. Float a section to a slide. Stain with hæmatoxylin. A fairly weak solution will stain in half a minute; a stronger one in two or three seconds. Counter-stain with an alcoholic solution of eosin (1 in 1000) for ten seconds. Run some absolute alcohol over the section for about ten seconds. Clear up in clove oil for about half a minute. Mount in Canada balsam. The remaining sections may be bottled in alcohol, and it is well to place along with them the remainder of the block for future reference or use.

What specimens can be examined in this fashion?—Everything from blood-clot to bone, and from a perfectly fresh specimen to one that has been preserved for years.

What size of section can be cut?—Anything from the capacity of the microtome cylinder to the smallest piece that can be handled.

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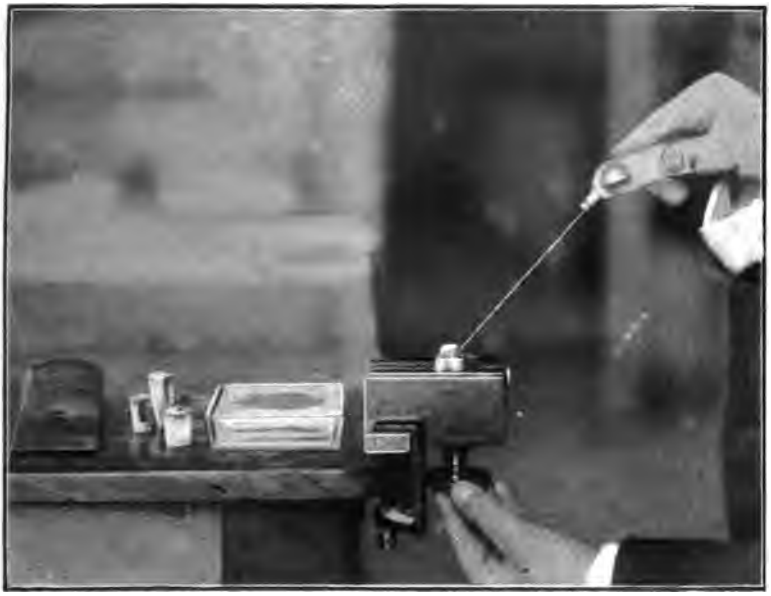

Fig. 1.—Method of freezing and clamping the block of tissue.

Fig. 2.—Method of cutting, the sections being piled up on the plane iron. The three corks are cut as described in the text.

PLATE III.—TO ILLUSTRATE DR RAMSAY SMITH'S PAPER.

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What speed can be attained?—Without laying claim to any special dexterity in this work, I can cut sections at the rate of 300 to 400 a minute, and prepare and complete a stained permanent preparation within six or seven minutes from receiving the fresh tissue from the body or the operating theatre.

What is the cost?—The initial cost of the microtome is 15s. The stains in bottles with stoppers cost in all three or four shillings. The most expensive item is the chloride of ethyl, which costs about 3s. a tube; but when it is remembered that an expert performer can cut several hundred sections from each of ten or twelve different specimens with a single tube, the cost comes to be very small indeed.

Points in Technique.

Where speed is an object, every detail is worthy of consideration, and I shall therefore note some points that, if attended to, will make the method expeditious and the results more perfect.

The cork.—When the piece of tissue is small, it will be of advantage not to split the cork the whole way down, but to leave the narrow end undivided, and insert the tissue at the broad end. The elasticity of the cork keeps the piece in position and makes clamping easier. When the block, on the other hand, is large or very firm, it may be well to make a longitudinal cut about half-way down, and then make a cut at right angles to this. It will be found that the pieces of cork fit the tissue and the clamp better in this way. Another method of attaining the same result is to cut an oblong piece out of the top of the cork so that the specimen may fit into it, the space, however, being smaller than the block. In fixing the cork in the clamp, it is well to screw the clamp so as just to fit the smaller end, and then to unscrew gradually while the cork is being pressed down until the top is flush with the top of the cylinder.

The spray.—The finer the spray the better. Some tubes discharge too freely, and in such cases time should be allowed for evaporation of the liquid. The block should not appear too wet.

The plane iron.—This should be held as shown in the photograph, and pushed straight along the runners. Care

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must be taken in case it slips off and injures its edge or digs into the block. The iron should be kept dry while in use.

The elevating screw should be used in an uninterrupted fashion. If it works very freely, a finger placed on the under surface of the screw head near the outer margin can turn it continuously without any stopping. At first there may be some difficulty experienced in keeping up a continuous motion with one hand while working the other in a to and fro manner; but a little practice will overcome any awkwardness. The plane iron will work more freely on the runners if the operator dips a finger in water and passes it along the runners, so as to make them wet.

Levelling the top of the block, if it be very uneven, may be effected by holding something firmly against the back of the block (say the edge of another plane iron), while the plane iron is pressed against the block at the front. When the top has been so levelled, it is well to direct the spray against it for a few seconds before commencing to cut.

Collecting the sections that do not adhere to the plane iron may be aided by placing an inverted section lifter behind the block or closing up the cavity of the microtome with a piece of wood, tin, or glass, so that only the cylinder with the block in it is visible. Mr Desmond fitted a piece of wood to the instrument I use to slide under the inner margin of the runners.

Fresh tissues.—Tissues of every sort may be removed from the body and placed at once in the cork for cutting. They should not touch water or any other fluid, no gum, mucilage, or any similar substance. Tumours and such compact tissues will cut and mount without difficulty, but such organs as lungs, lymphatic glands, and specimens containing a large proportion of loose cells or parenchyma, may when fresh give rise to some trouble. In these cases the sections may be put into a 2 per cent. to 4 per cent. solution of formaline, instead of plain water, for a minute or two when cut. This will also facilitate dehydration of the section when it is being mounted.

Formaline specimens.—These may be cut at all stages of preservation without any special manipulation or preparation.

Spirit specimens.—Organs that have been in spirit can be cut after the block has been "hydrated." Specimens pre-

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served for months or years should be put in water for twelve to twenty-four hours, or even longer if necessary. They will then be found to have swollen considerably. Press the block lightly between the folds of a towel so as to squeeze most of the water out of it, then insert in the cork and cut in the manner described. If the tissue appears granular or mealy, it is probably not sufficiently hydrated.

Staining.—If a good, trustworthy, quick staining solution of hæmatoxylin is available it forms perhaps the best stain. But I find great difficulty in procuring a satisfactory and uniform solution of hæmatoxylin in this climate. Alum carmine gives very fine results, though more slowly. Its action may be hastened by judicious warming of the section in the stain for a few seconds over a spirit lamp or bunsen burner. Then the section should be plunged in water and washed for a few moments before being further stained, otherwise crystals will be deposited in the section when completed. *As a counter stain* eosin is very satisfactory, and is perhaps the most generally useful. It may be put on the section immediately after the hæmatoxylin or after washing out the alum of the alum carmine, provided the solution is weak, and then a little absolute alcohol run over the specimen. If the eosin solution is strong a good deal of alcohol is required to wash it out, and this wastes time and makes a badly stained section. Picromarmine is too slow when rapid results are required.

The clove oil should be placed at the side or at a corner of the section so as to lift up the specimen on its surface. The oil may be removed by blotting paper, the last of it being absorbed by pressing the plain side of the blotting paper down on the slide and drawing a finger firmly over it.

Air bubbles if they occur may be got rid of by warming the section gently over a flame, and this process usually improves the general appearance of a specimen and sharpens the details.

Manipulation of the specimen on the slide affords the advantage of allowing examination of the section under the microscope at all stages of preparation. Very often an opinion can be formed from an examination of the unstained or partly stained section ; and, on the other hand, a worthless or un-

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suitable section can be discarded without putting it through the whole process of staining and mounting.

Micro-organisms in the tissues may be stained either in fresh or preserved tissues, cut in the manner described and treated with their appropriate stains. Dr MacDonald, resident physician in my wards at Adelaide Hospital, has made some very fine preparations from sections so cut; and Veterinary-Surgeon Desmond, Chief Inspector of Cattle for the Central Board of Health, has handed me a number of preparations which he has cut and stained with his own hand after these methods.

"LATAH" AMONG SOUTH AFRICAN NATIVES

By ANDREW GILMOUR, M.B., Ch.B., Ed.,
Civil Surgeon, South Africa

UNDER the title "Latah" is described a mental affection the subjects of which display a strongly marked susceptibility to the influence of suggestion. Example, also, in those suffering from this psychical disease produces a corresponding impulse to imitate. While Latah is the term locally applied in the Malay peninsula to this disease, it may be of interest to note that the condition appears to be not uncommon among the Kaffirs in South Africa. Personally, I have, while in South Africa, seen three cases of the mimetic form. The subjects were all adult male Kaffirs and appeared under ordinary circumstances in no way different from their fellows. One was employed by the British Government as a native transport driver, while the other two had been in the service of farmers for many years. The malady had never disqualified any of them for the employment in which they were engaged. They all exhibited similar phenomena under excitement, though not to the same degree. A description of one case will therefore suffice.

My attention was first attracted by the joking carried on at the expense of a latah struck man. One of his tormentors had thrown a cigarette on the ground and had told the latah struck man he could have it. Whenever he stooped to pick up the cigarette his tormentor cried, "It is a snake," causing the

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man to spring back crying "snake" and exhibiting every sign of fear, nor would he approach till told again to pick it up, when the same performance would be gone through. After his tormentor had tired of this, he told the latah man to pick up the cigarette and light it, at the same time handing him a box of matches. The practical joker now stood about thirty feet away and whenever a match was struck he pretended to try and blow the match out. The influence of example was too strong for the latah man, who, following the example, blew out the match. In this way every match was blown out though the victim made strenuous efforts to light his cigarette. On the removal of the influence of suggestion, the cigarette was easily lit.

Subsequent examination of these latah men revealed that they were all of good intellect and excellent physical development. One, indeed, was frequently employed by shooting parties from his usefulness in tracking game and also from his ability to recount tales of native wars.

In all three sudden auditory, tactile or visual stimuli produced the diseased condition. Sudden and unexpected noises caused them to imitate these sounds, while words, musical notes, etc., were accurately repeated by the men. A sudden touch appeared to make them lose control of themselves, while all movements made by the experimenter were copied without fear of consequences. In this way a practical joker by shooting out his arm would cause the latah man to involuntarily follow his example, even though he knew he would strike a more powerful man standing beside him.

The duration of this hypnotic-like condition in these men varied from a few seconds to a few minutes, or until the removal of the suggestion. Consciousness and intellect remained clear, but the mimicry was unwilling, even though every effort was exerted by the subject to escape from his tormentor. These men were conscious of and ashamed of their infirmity, but in no instance was any effort made by the victims to retaliate at any time on those amusing themselves at their expense and they were frequently the butt of practical jokers of all ages.

A paroxysmal form of momentary duration in which coprolalia is a prominent feature has been mentioned in

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papers on Latah among the Malays, but no cases were met with.

All three were known to have been affected for many years, but no definite duration, or history of predisposing and exciting causes could be obtained. No history of the course of the disease was obtainable.

Latah seems to be closely allied to cases of convulsive tic, and akin to the emotional diseases by no means uncommon in all barbarous and semi-civilized countries. Though generally classed along with those religious and social epidemics which have affected many parts of Europe at varies times, Latah differs greatly from the manifestations of those disorders. The attacks in this disease are always of sudden onset, produced by shock or suggestion, are not under the control of the individual, while the sufferers always try to avoid exhibiting their weakness and never voluntarily induce the attacks. The only resemblance indeed is in the absence of any gross lesion and in the acceleration of the heart's action during the period of excitement.

Native traditions and superstitions are usually supposed to determine the type the psychical disease will assume in various races. It is therefore peculiar to find the cases seen in South Africa so closely resembling the cases of Latah described in the Malay peninsula, where obviously folk-lore and custom so widely differs. In the three cases mentioned above no influence of religion or superstition could be traced, and no native name could be found applied to the disease, though the Dutch word meaning "fright" was always prefixed to the names of the men.

In conclusion it may be interesting to point out that though Latah is more common in females than in males, no cases were seen among native women; and that though there are many Malays in South Africa no influence of heredity or association could be traced.

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OBSERVATIONS ON CASES OF PERNICIOUS ANÆMIA, WITH SPECIAL REFERENCE TO THE BLOOD CHANGES

Part of a Thesis presented to the University of Edinburgh

By ALEXANDER GOODALL, M.D., M.R.C.P.E.,
Edinburgh

INTRODUCTORY.

IT has been my fortune to meet with several cases of pernicious anæmia. I propose to give some notes of those I have been able to watch most closely, and to give an account of the blood in all the cases, with a view to ascertaining what changes are to be found in the blood in the different degrees of anæmia, and what indications as regards diagnosis, prognosis, and treatment are to be obtained by the blood examination. Much work has recently been done in connection with the subject of pernicious anæmia. Though our knowledge of the condition has been considerably increased, its essential features still remain obscure, and perhaps it is this obscurity that renders the subject so attractive.

All the theories regarding the pathology of pernicious anæmia have so much in their favour that no one of them can be lightly put aside; but so much more can be urged against all, that it is still more difficult to accept any one of them.

I do not intend to discuss this side of the subject. Much more work has yet to be done regarding it. I venture, however, to state tentatively what I believe regarding the nature of the disease.

1. Pernicious anæmia is a degeneration of the blood due to exhaustion of the hæmogenic function.
2. That exhaustion is due to the increased calls upon hæmogenesis caused by the prolonged operation of various morbid conditions, which impair the nutrition of the blood, and which, in the first instance, produce merely what we call secondary anæmia.
3. The degeneration of the blood is indicated by the changes in the red corpuscles and by the presence of embryonic (and, therefore, imperfectly evolved) cells in the blood.
4. When the degenerative changes known as pernicious anæmia are established, the case is as hopeless as a case of degeneration of the spinal cord, though the hæmogenic function, either spontaneously or as the

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result of treatment, may sufficiently recover to supply healthy-looking cells to the circulation for a time.

Symptoms.—The symptoms are fairly definite, and, indeed, have not been more clearly or picturesquely described than they were by Addison originally, yet these symptoms are in the main those of any severe anæmia, and every now and again one meets with cases in which, even after careful examination of the blood, the diagnosis must remain for a time, at least, in doubt.

Terminology.—In dealing with any subject concerning the blood, we are met at the outset with the vexed question of classification and nomenclature of the white cells. The varieties of leucocytes more commonly met with are as follows:—

(*a*) Small lymphocytes which have a relatively large nucleus.

(*b*) Large lymphocytes whose nuclei are relatively smaller. (Intermediate groups are also found.)

(When methylene blue is used, the nucleus in these cells is usually stained more darkly than the surrounding protoplasm, but frequently the reverse is the case, and both varieties may be seen in the same film or even in the same microscopic field. The difference appears to be due to differences in the amount of chromatin in the nuclei, and in the number and arrangement of the fine basophile granules in the protoplasm.)

(*c*) Polymorphonuclear leucocytes; and

(*d*) Eosinophiles.

The granules in the polymorphonuclear cells are frequently called "neutrophile." They undoubtedly stain with acid, and not with basic dyes. Kanthack called these cells "fine granular oxyphiles," and named the cells generally known as eosinophiles, "coarse granular oxyphiles." The granules in the eosinophiles are larger and more regular in outline than those in the "fine granular oxyphiles," but I am not satisfied that this difference in size and shape is the only one. The granules of both varieties stain well with Ehrlich's triple stain. Both stain well with eosine when the counter stain used is methylene blue, but only the granules of the "eosinophiles" can be demonstrated when the counter stain used is hæmatein. When hæmatein and eosine are used, the protoplasm of the polymorphonuclear cells appears as a homogeneous pink. Were the difference between the varieties of granules only a matter of size and shape, it would be difficult to understand why the mere presence of hæmatein should alter the affinity of the small granules for eosine, while it did not affect the

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reaction on the part of the large granules. A variety of white cell—the basophilic "mast cell" is found in small numbers in healthy blood. (It is common in spleno-myelogenous leucocythæmia.) I have frequently counted a thousand leucocytes without seeing one "mast cell." The cell is stated by Kanthack to be non-amœboid. Gulland states that it is amœboid. The nucleus is generally trilobed, but is often much obscured by the granules. Cabot gives their numbers in health as $\frac{1}{10}$ to $\frac{1}{2}$ per cent.

Myelocytes.—Much confusion exists regarding these cells. They are the "markzellen" of the Germans, the "globules blancs hypertrophies" of Hayem. Cornil, who first noticed them, called them "Cellules medullaires." Von Limbeck (*Grundriss einer Klinische Pathologic des Blutes*, 2nd Edit. Jena, 1896) writes of them as follows:—"Markzellen are generally very large cells, whose nucleus fills mostly the whole body of the cell and is very poor in chromatin. They originate in the bone-marrow (Cornil, H. F. Müller). They are partly eosinophile." In spite of this statement, the cell which is figured by Limbeck as a "mark cell," is a lymphocyte. Fortunately, recent works are more definite and show more agreement on the subject, but one is disappointed to find in a work of such importance as "Clifford Allbutt's System of Medicine," the following paragraph:—"The large hyaline leucocyte or myelocyte, as it is also named, possesses a larger amount of protoplasm than the smaller variety. The nucleus is usually spherical or reniform, and fairly regular in outline. As it possesses a comparatively small amount of chromatin, it does not stain well with aniline dyes. The cell has not been proved to be amœboid, but, nevertheless, seems capable of acting as a phagocyte. In the blood it is less numerous than the lymphocyte, forming usually less than 10 per cent. of the hæmic leucocytes. Increase in the number of leucocytes is usually accompanied by increase in the total number of myelocytes also, this being specially noticeable in the leucocytosis which accompanies the anæmia of pregnancy, and that which ensues on typhoid fever. In lymphatic leukæmia, however, enormously as the number of lymphocytes in the blood may be increased, no such increase in that of the myelocytes has been observed. During life the cell protoplasm is apparently homogeneous, but, when dead, staining by means of methylene blue shows it to be full of exceedingly fine granules embedded in a matrix which does not take up the stain" (Copeman, "Clifford Allbutt's System," vol. v. page 419). Now, most of this paragraph holds good regarding the large ymphocytes or "large hyaline leucocytes," but few hæma-

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tologists, I think, will agree that the "large hyaline lymphocytes" may be also indiscriminately named "myelocytes." Exception may further be taken to the statement that an increase in the number of large lymphocytes—if so we are to interpret Dr Copeman's use of the word "Myelocyte"—has not been observed in lymphatic leucocythæmia. I have several preparations in which the large forms preponderate. This, however, is by the way. By most writers the term "Myelocyte" means a marrow cell which is never found in normal blood. The myelocyte is a spherical cell with a large round or reniform nucleus embedded in granules which stain with eosine or Ehrlich's triple stain. (Eosinophile myelocytes also occur.) Staining with eosine and methylene blue shows that it seems also to possess fine basophile granules. Of the myelocyte, Cabot (Clinical examination of blood) writes, "One sees at once how little it differs from the large lymphocytes (simply in having granules) and from the polymorphonuclear neutrophile (only in the shape of its nucleus). I refer to this point because pernicious anæmia is one of the few conditions in which myelocytes are found in the blood. We may now repeat that the varieties of white corpuscles are:—small lymphocytes, large lymphocytes, polymorphonuclear leucocytes, eosinophiles, basophile leucocytes (mast cells), and myelocytes.

Fortunately, there is not the same confusion regarding terminology in the case of the red cells. The abnormal red cells we shall have to refer to are megalocytes, microcytes, megaloblasts, normoblasts and microblasts and poikilocytes. Highly refractile microcytes which stain deeply with acid dyes are sometimes referred to as Eichhorst's corpuscles. A word may be said with regard to the methods employed in examining the blood. All the enumerations of cells were made by means of the Thoma-Zeiss hæmocytometer. The hæmoglobin was estimated by means of Gower's hæmoglobinometer except in Case IV. All the estimations in that case were made with the Von Fleischl instrument. Coagulability was usually determined simply by manipulating a drop of blood along with a drop of healthy blood on a slide. The method of fixing the films usually employed was by immersion in formalin 10 per cent. in alcohol as recommended by Gulland (*Scottish Med. and Surg. Journal*, April 1899). Some of the earlier films were fixed in alcohol and ether, some in a mixture of tannic acid, alum and corrosive sublimate. Of these, I have found Gulland's method the most rapid and efficient. The stains most frequently employed were eosine and methylene blue. A useful combination of these is Jenner's stain (see *Lancet*, Feb. 18th, 1891). Ehrlich's triple stain aud eosin with Mayer's hæmatein were

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sometimes employed. The latter combination is not so useful (except for nuclear structure) as the others, but has the great advantage that the veriest novice could hardly mismanage its use. I venture to make a practical suggestion here, viz:—That when blood specimens are prepared by only one or two methods of fixing and staining, a few unstained films should always be retained for future use. I have several times noticed points concerning stained films which I have wished to clear up by means of other methods and have been unable to do so for the want of material. *Experientia docet!*

For permission to make use of Cases 1, 2, 3, 5, 6, 7, 8, 13 and 14, I am indebted to Dr James; for permission to make use of Case 4 to Mr A. H. Moxon of Great Yarmouth.

CASE I. A married woman, aged 27, residing in Leith, was admitted to the Edinburgh Royal Infirmary under the charge of Dr James on the 26th of July 1899. She complained of sickness, weakness and jaundice. The notes of her case proceed as follows:—

History.—Patient's father died when she was six years old. She does not remember her mother. Her home is comfortable. She has been accustomed to good food. She has two children, the youngest of whom is eight months old.

Previous Illnesses.—Diseases of childhood. Anæmia at the age of nineteen. Abscess of the right mamma two years ago, and, again, three months ago. Patient did not suffer from hæmorrhage when her babies were born.

Present Illness began nine weeks ago. She first noticed that she was losing strength and became unable to carry her baby. One morning she fainted and was seen by Dr Calder of Leith. Her skin became yellow and on several occasions she vomited. (Dr Calder has informed me that at this time she suffered from actual jaundice.)

State on Admission.—Patient is well-developed and in fairly good condition, but says she has recently lost flesh. Weight 7 st. 2½ lbs., Temp. 99. The skin and conjunctivæ have a slight yellow tinge.

Alimentary System.—Teeth bad. Gums very pale. Tongue large and flabby with wide furrows in all directions and slightly coated. Appetite very poor. Patient complains of pain after food, with occasional vomiting. Bowels fairly regular. The liver seems slightly enlarged.

Hæmopoietic System.—There is no enlargement of the thyroid and no unusual enlargement of any of the lymphatic glands. The spleen is enlarged and easily palpable. It measures eleven inches in its long axis. The blood looks

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watery and does not coagulate readily. Rouleaux formation is slight, fibrin is scanty and there are marked differences in the size and shape of the red cells, but the average size is increased. The red cells number 872,000; white cells 2,500; hæmoglobin is 23 per cent.

Stained films show, in addition to the difference in the shape and size, that the red cells are deeply stained, many showing no central depression. A few red cells show slight polychromatophylia. Nucleated red cells and a few myelocytes are present. The plates are not increased. (See Tables 1 and 2.)

Circulatory System.—There is marked dyspnœa on the least exertion, accompanied by a feeling of giddiness. On two occasions patient has fainted. On auscultation at the mitral area, the first sound is replaced by a long, loud, blowing, systolic murmur. The second sound is loud and slapping. At the aortic area the sounds are closed but the second sound is loud and slapping in character. At the pulmonary area the sounds are closed, but have a slapping character. There is a loud venous bruit in the neck and a bruit can be heard over the eyeball. The pulse is 100 per minute, regular in time and force. The beat is of fair volume, but the tension is low.

Integumentary System.—The skin feels smooth and is slightly tinged with yellow.

Urinary System.—Urine is dark amber in colour; quantity passed 40 oz.: reaction, acid; sp. gr. 1013; slight deposit of mucus. Urea 5½ grs. per oz. Spectroscopic examination shows a faint band due to urobilin between the green and the purple.

Nervous System.—Patient occasionally has numbness and tingling in her fingers.

Treatment and Progress.—For the first week, patient was kept on milk. The diet was then gradually improved, and after a fortnight, ordinary house diet was allowed. Three days after her admission patient was treated with Liq. Arsenic in five minim doses thrice daily. At the end of the first week arsenic was stopped, and Pot. Permanganate in gr. ii. pills was given thrice daily for a week. The corpuscles, however, fell in number and the permanganate was stopped and arsenic again given. The dose was gradually increased to ♏ x t.i.d. As Table 1 shows, patient now steadily improved. After the first week urobilin never appeared in the urine. She menstruated on July 28th and again on August 5th, the discharge on each occasion lasting three days. The temperature usually varied between 98·8° and 100°. On the evening of August 21st it reached 102°F. On August 25th it fell to 99°, and during patient's stay in the Infirmary was never again higher. On September 7th, she was sent to the Convalescent home. Her weight was then 7 st.

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4 lbs. She expressed herself as feeling strong and well. The spleen was just vaguely palpable; the cardiac and venous murmurs had disappeared. After three weeks, patient was again seen. Her complexion was now almost ruddy and her red cells and hæmoglobin had made a further slight increase. She was advised to continue to take arsenic and no more was heard of her till about a year had elapsed. In June 1900 she applied for readmission to the Infirmary, but died before she could take advantage of the bed that had been reserved for her. Dr Philip of Inverkeithing was kind enough to give me the following notes regarding her:—"She was confined prematurely, on June 7th, and was attended by a midwife. There was no great loss. For ten days before she had been in bed and was taking arsenic, which she had previously stopped. After confinement she stopped the arsenic owing to sickness. The puerperal discharge was slight and had ceased before death. There was no milk. There was intense anæmia and the skin was of a lemon-yellow colour. No diarrhœa, no hæmorrhages; Temp. from 100° to 102°. No enlargement of liver or spleen. The blood and urine were not examined. There was slight œdema of the ankles. Patient was occasionally delirious and died on June 20th.

TABLE I.

Date.	Red Cells per c.mm.	White Cells per c.mm.	Hb. %.	Colour Index.
1899				
July 28th	872,000	2,500	23	1·3
Aug. 3rd	1,182,000	4,375	23	1
„ 11th	800,000	3,125	23	1·4
„ 18th	1,000,000	3,735	21	1
„ 24th	1,500,000	1,562	30	1
„ 31st	2,000,000	4,650	35	·8
Sept. 7th	2,316,000	1,850	43	·9
„ 26th	2,800,000	—	48	·8

TABLE II.

	Percentages of White Cells.				Number per 1000 White Cells.	
Date.	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Myelo-cytes.	Normo-blasts.	Magalo-blasts.
1899						
July 28th	67	26	5	·6	8	56
Aug. 3rd	53	46	1	—	10	20
„ 11th	53	46	·5	·5	10	20
„ 18th	55	43	2	2	10	10
„ 31st	49	46	4	—	—	2
Sept. 7th	44	52	4	—	—	—

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Some points in the case may now be referred to. It is interesting to note that symptoms were first noticed six months after confinement, and that the fatal relapse was also associated with pregnancy and childbirth, though in neither instance was there a history of hæmorrhage. Regarding the blood changes, we may note the continued low leucocyte count and the curious fact that while the number of red cells was increasing and that of the abnormal cells decreasing, the percentage of lymphocytes was going up at the expense of the polymorphonuclear cells. The steady rise of red cells coincident with the administration of arsenic, and their fall during the week that arsenic was stopped, is worthy of note.

CASE II. An engineer, aged 43, residing at Roslin, was admitted to the Royal Infirmary, under the charge of Dr James, on August 22nd, 1899, when the following notes were taken:—

Complaint.—"Pain in the back and chest, tingling in the fingers and toes, shortness of breath and weakness."

History.—Patient's family history is good. He is temperate in his habits, has a comfortable home, and was regularly at work till four years ago.

Previous Illness.—Fourteen years ago patient had an attack of typhus fever.

Present illness began four years ago. Patient attributes its onset to excessive cycling. He first noticed numbness at the points of his fingers, and a year later he noticed the same sensation in his toes. He became gradually weaker and got breathless, and had to give up work for some time. He saw a doctor, and after a few weeks he was able to resume work, but ever since he has been obliged to give it up at intervals owing to weakness.

State on Admission.—Patient is well developed and looks well nourished, though the muscles are soft. Height, 5 ft. 8½ in.; weight, 10 st. 2 lbs. Temperature, 98·6°.

Alimentary System.—Teeth neglected and dirty, but not carious. Tongue slightly furred. Appetite poor. No trouble with digestion. Bowels tend to be confined. The liver is slightly enlarged, and can be felt two inches below the costal margin in the nipple line.

Hæmopoietic System.—The spleen is not enlarged. None of the lymphatic glands are enlarged. The blood looks pale and watery and coagulates slowly. There is slight poikilocytosis, and rouleaux formation is impaired. The red corpuscles number 2,100,000, white 7,300 per c.mm. Hæmoglobin, 52 per cent. Megaloblasts and normoblasts are present. The plates are diminished.

Circulatory System.—There is at times pain over the heart. There are palpitation and dyspnœa on slight exertion. There

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is pulsation in the neck. The heart is somewhat enlarged. A systolic murmur can be heard over the mitral, aortic, and tricuspid areas. The pulmonary second sound is accentuated. The pulse is 68 per minute, regular in time and force. Tension is low, volume small. The wall is not thickened.

Respiratory System.—There is a slight cough, not accompanied by expectoration. Respirations are 20 per minute. The chest is well formed and seems healthy.

Urinary System.—The urine is straw coloured, acid, sp. gr. 1014.

Nervous System.—Patient complains of feelings of tingling and numbness in the fingers and toes. These sensations are not affected by exposure to heat or cold, and are not constantly present. There is slight tenderness on tapping the shins.

Progress.—Patient was treated with gradually increasing doses of Liq. Arsenicalis and an iron and aloes pill twice daily. He was three weeks in hospital. During that time he showed very little change. The blood condition showed very slight alteration. The temperature never rose above 100°. The bowels acted regularly. The pulse ranged from 64 to 92 per minute. The cardiac murmurs became less marked, and his weight increased by 3½ lbs. He was then discharged. On March 30th, 1900, patient was readmitted. He complained of great weakness, eructations, and occasional vomiting and loss of sensation in the fingers. He was troubled with constipation and occasional diarrhœa. The liver was found one inch below the costal margin in the nipple line. The spleen was slightly enlarged. Patient complained of throbbing in his temples, palpitation and faintness.

There was a soft, systolic, mitral murmur and a *bruit de diable* could be heard in the neck. The pulse was 80 per minute, regular in time and force, but of low tension and small volume. He had a cough with slight muco-purulent expectoration accompanied by a feeling of soreness in the chest. No percussion dulness or accompaniments on auscultation could be made out. The urine was pale: sp. gr. 1016; reaction acid. Patient complained of great numbness and loss of sensibility in the fingers, and pains in his bones. He said he at times dropped coins as he could not feel them. Sensibility to touch was impaired. Sensibility to pain, heat or cold was not affected. For two months, he had suffered from slight deafness and his sight had been rapidly failing. The pupils reacted well to accommodation and light. Both fundi seemed healthy. The patellar jerks were very slight. Muscular power was only slightly diminished, but patient was very easily exhausted. From March 30th till April 12th patient was treated with Liq.

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Arsenicalis in ℥ v doses thrice daily. He had in addition two injections of Brown Séquard's bone marrow and spleen juice at intervals of a week. During this time his condition showed little change. His temperature was never above 101° F. On April 14th arsenic was stopped and 1 c.c. of anti-streptococcus serum was injected once a week. About three hours after each injection the temperature rose a few degrees, *e.g.* from normal to 101·5° from normal to 103°, from 97° to 101·5°, and from normal to 102·5°. There was almost no alteration in the rate or tension of the pulse and differential counts of the leucocytes before the injection, and during reaction showed a very slight increase of the polymorphonuclear cells. A curious point is that one June 15th, the usual day for the injection, the serum was not given, yet the temperature rose from normal to 103° in the afternoon, and fell again before evening. Patient always expressed himself as feeling better after getting the serum. On July 17th, the blood had lost its streaky appearance, and looked a good colour. Arsenic was again administered, and on July 18th ℥ x of tincture of the perchloride of iron thrice daily were also commenced. Patient was sent to the Convalescent home on July 30th. On August 3rd, he was sent back to the Infirmary. He said he had caught a chill by getting up through the night. His temperature was 104°, and he was suffering from diarrhœa. He was ordered 10 grs. of sulphate of quinine thrice daily, and the next day the temperature fell to 100°, and the next to 98°. On August 9th an injection of 1 c.c. of antistreptococcus serum was given. On this occasion there was no reaction. Patient's symptoms rapidly improved, and he went home on September 22nd, 1900.

TABLE III.

Date.	Red Cells per c.mm.	White Cells per c.mm.	Hb. %	Colour Index.
1899.				
Aug. 22nd	2,100,000	7,300	52	1·2
Sept. 14th	2,066,400	2,187	48	1·1
1900				
Mar. 30th	1,500,000	2,500	35	1·1
May 8th	1,875,000	2,500	27	·7
„ 22nd	1,972,400	{ 2,500 / 3,125	30	·7
June 4th	2,012,250	4,166	48	1·2
„ 15th	2,480,000	2,812	35	·7
July 17th	2,880,000	2,187	42	·7
„ 30th	2,500,000	2,500	38	·7
Aug. 7th	1,625,000	—	30	·9
Sept. 3rd	1,460,400	—	30	1

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TABLE IV.

Date.	Percentage of White Cells.				Number per 1000 White Cells.	
	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Myelo-cytes.	Normo-blasts.	Megalo-blasts.
1899.						
Sept. 4th	54	42	3	0	10	15
1900.						
May 22nd	43	56	1	0	0	4
„ after serum	59	49	1			
June 20th	64	34	2	0	0	0
July 17th	49	48	2	5	0	0
„ 30th	54	38	8	0	0	0

This case is remarkable for its uneventfulness during a period of observation of over a year, and during the previous four years of patient's illness. The number of red cells shows very little variation. The febrile attack which patient suffered from at the convalescent home seemed to have had the effect of reducing the red cells to a lower number than they had ever before reached. Unfortunately I was unable to make observations of the blood after that period. Though nervous symptoms were complained of, no sign of gross lesion could be detected. The case illustrates what I have frequently noticed, viz., that after treatment the symptoms may be immensely mitigated although the blood shows little improvement. No demonstrable improvement of the blood followed the administration of anti-streptococcus serum.

To be continued.

Special Articles

EXTRACTS FROM THE TALMUD AND FROM CELSUS ILLUSTRATIVE OF THE STATE OF GYNECOLOGICAL MEDICAL SCIENCE AT THE BEGINNING OF THE CHRISTIAN ERA

Read before the Obstetrical Society, Edinburgh

By H. M. CHURCH, B.Sc., M.D., F.R.C.P.Ed.,
Edinburgh

THIS communication is the outcome of study of the diseases recorded in the Bible. It is accidental that it has assumed a gynecological character. But in looking over the vast field of pathology in the Scriptures, and especially on referring to

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collateral Jewish and other writings, diseases of women seem to occupy a prominent place, and invite the attention of the physician of the present day. When we read, for instance, in St Mark's Gospel of the case of the woman whose strength had been undermined by a uterine hæmorrhage going on for twelve years, more or less continuously, who had suffered many things at the hands of many physicians, who had spent all that she had, and was nothing bettered but rather grew worse, our curiosity is aroused as to what kind of treatment the poor woman did undergo which had been both so expensive and so ineffectual. Nor does St Luke, the physician evangelist, who lingers over the pathological side of his Gospel with an intense interest, throw any light on the details of this particular case. He, too, only relates the case and its miraculous and instantaneous cure by touch of the Saviour's garment. It is interesting to note how St Luke does not add the words, "but rather grew worse," possessed as he was with the finest spirit of consideration for his fellow-practitioners, we must suppose. The woman whose sad case they record had seen many physicians. It is not likely that she had seen Celsus, who then flourished, but whose headquarters were in Rome; wealthy patients, however, at that time, appear to have travelled long distances to see a physician of eminence. The inadvisable habit of rapidly changing doctors is said still to be common in the East, and of many an Oriental patient the sepulchral inscription mentioned by Grotius may be applicable, "Turba medicorum me perdidit." There seems to be little perseverance in the same line of treatment or medicine. In the Gemara, or medical commentary of the Babylonish Talmud, many cases are given. So gruesome and grotesque are they that we may infer that this woman of the Scriptural story may have been the victim of much harsh usage. Dr Lightfoot shows (Hor. Heb.) the torture women were put to for cure of uterine hæmorrhage. The following may be quoted which illustrates the kind of treatment in vogue, gross superstition being its prominent feature. "Take of Persian onions thrice three measures, boil them in wine, and give it her to drink, and say, 'Arise from thy flux.' But if this does not prevail, set her in a place where two ways meet, and let her hold a cup of wine in her hand, and let somebody come behind her and affright her, and say, 'Arise from thy flux.' But if this does not benefit, let them dig seven ditches, in which let them burn of such vines as are not circumcised (that is, that are not yet four years old), and let her take in her hand a cup of wine; and let them lead her away from this ditch, and make her sit down over that, and let them remove her from that, and make her sit down over another. And in every removal you must say to her, 'Arise

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from thy flux,' and so on." Other cases need not be quoted. In all of them, psychological factors, such as mental or bodily shock, fear, faith, hope, appear to have been employed with more efficiency as hæmostatics than any drug. It may be gathered from the Talmud that *treatment* in the hands of the Jewish doctors was poor, and far behind their speculations and experiments. With Celsus, the Gentile physician, the converse was the case. But the questions taken up by the Jews are of interest both to physiologists and pathologists of the present day, and are prophetic of modern science.

Medico-legal and medico-ethical questions abound. To the Obstetrical Society the traditions and physiological ideas in the Gemara are not without special interest. Many of them are sexual and have much to do with reproduction. To Rabbinowicz, who lately published his book, "La Medecin du Talmud," we owe most of our knowledge of the theories which exercised the minds of doctors, Jewish and Gentile, nearly two thousand years ago. He has fished up, in a perfect state of preservation, out of old Jewish literary wreckage, many an antique medical curiosity. Bergel also has brought to light much that is interesting. Before referring to Celsus, in whose name centres and is handed down to us the best medical traditions of the time, and from whose writings a few quotations are taken later on, I shall, in the first place, give one or two extracts, suitable for this Society, from writers on the Talmud. Some of the subjects, placed on scientific lines, might be provocative of a good deal of discussion by us.

To begin with the embryo. Its life, from the time of conception, was believed by the rabbis to be under the special care of an angel, who, during its nine months' growth *in utero*, commenced its education, giving it its first tendencies, and initiating it in all learning, but especially in the knowledge of the Rabbinical laws.[1] In the work of this angel we may see a figurative expression of their belief in heredity and inherited tendencies, the family characteristics or inborn traits of Darwin as we would now express it. At the time of birth the angel smites it on the mouth,[2] as if to sever it from all the *pre*-natal impressions and influences that acted upon it as the susceptible fœtus *in utero*. The angel cuts, as it were, a metaphysical umbilical cord, and starts the infant on his individual life, endowed with his inherited constitutional energies in a new environment.

As regards the probable sex of the embryo, the Talmud goes on to show how this depends, as it unscientifically expresses it, "upon whether at coitus the male or the female

[1] Bergel, Nidah, 30, 2. [2] Dr James Finlayson's "Talmud," p. 232.

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seed gets first into the womb. If the former, then female children result; if the latter, male children.[1] The difference of sex ought to make itself known, however, even from the time of conception or shortly after, by certain signs. "A woman who is pregnant with a male child ought to have a better complexion, the quickening should occur earlier, and parturition also ought to be easier and less painful. The last-mentioned circumstance is specially insisted upon by the Talmudists."[2] A sexual theory, bearing on this subject, is given by Rabbinowicz in the following words:—"Si la femme donne sa semence (le sang) avant l'homme, le fœtus sera un garçon; si c'est le mari qui donne d'abord sa semence (le sperm), le fœtus sera une fille. On peut donc, si on veut avoir des garçons, l'homme peut, pour cet effet retarder son emission de sperm pour laisser la femme donner sa semence avant lui. Rabba dit qu'on obtient des garçons en repetant le coït; car, la femme excitée par le premier coït, émettra son sperm avant l'homme pendant le second."[3]

The subject of cohabitation during pregnancy was much discussed by the doctors in the Gemara. On this matter Rabbinowicz sums up their opinion in these words:—"Les premiers trois mois de la grossesse (l'enfant se trouvant dans la region inferieure) la cohabitation est mauvaise pour la mère et pour l'enfant; les autres trois mois, la cohabitation est mauvaise pour la mère et bonne pour l'enfant; les derniers trois mois elle est bonne pour la mère et pour l'enfant, car elle fortifie le fœtus."[4]

Bergel tells us that the Talmudists refer to monsters like insects, fish, birds, cats, dogs, and indeed like almost any creature.[5] They did not know, to use a modern expression, that "human organogenesis is a transitory comparative anatomy."[6] They might have found some explanation of these phenomena of arrested and altered development in this fact of science. Nor were they aware of the remarkable frequency, as has recently been pointed out by Gheorghin, as the probable cause of malformations, of acute or chronic infectious disease being present in one or other of the parents at the time of conception.[7] As regards hermaphrodites the Talmudists could not decide whether they belonged to the

[1] "Gemara," Berach, 60; Nidah, 28.
[2] Finlayson's Translation of Bergel, "Med. der Talmud," p. 73.
[3] Page 85, Nidah, fol. 31.
[4] Page 84, Nidah, fol. 31.
[5] "Med. der Talmudisten," Nidah, 21, 1, etc.
[6] Marshall's "Vertebrate Embryology," p. 26.
[7] Professor Adami, Magill University, May 1901.

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male or female sex. Unfortunately there was no Ballantyne in those days to give morphological expositions on this difficult subject. Had there been, some unfortunate creatures born with such deformities might not have been excluded from civil and religious rights, as was then the penalty for having been born deformed.

As to the mother. On the ancient law regarding the purification of the mother after childbirth, we have a full account given in Leviticus (Lev. xii. 2, 4, 5) as follows:—"If a woman have conceived seed, and borne a *man child*; then she shall be unclean *seven* days; according to the days of the separation for her infirmity shall she be unclean. And she shall then continue in the blood of her purifying *three and thirty* days. But if she bear a *maid child*, then she shall be unclean two weeks, as in her separation; and she shall continue in the blood of purifying *three score and six* days."

Much discussion has arisen from this curious point in the Levitical law.—*The long period of purification after having a female child.* Certainly it does not regulate us in our midwifery practice nowadays. Indeed, do we not rather look for greater difficulty in labour with a male child, and more anxiety in the puerperium following? But this probably has arisen from altered conditions of life. In the early history of the human race, out-of-door and nomadic habits of life, as in the case of the Hebrew people, must have greatly invigorated the female constitution for child-bearing. Times have changed for Jew and Gentile alike. The world was not so crowded, nor life so strained, then as it is now. Hence the sad departure from the physiological simplicity of reproduction of primeval times.

To account for the greater difficulty in labour with a female child, a writer in the Talmud states[1] that the female fœtus turns round so as to present (*at birth*) with the face *anteriorly*, while the male presents with the face *posteriorly*. We can hardly doubt the accuracy of this statement, being a matter simply of observation and not of theory. Granting that this observation is correct, we have some explanation of the greater difficulty in bringing forth a female child, and the necessity for prolonged care afterwards, according to the Levitical law. It is to be observed, however, that the writer only states the position of the head at birth, and says nothing about the mechanism of labour. One would infer from the statement that all female children would lie with the occiput posteriorly. Nowadays the largest proportion of all births, of female as well as male children, have the occiput to the left, and of these the largest number are R.O.A. In comparing the statements of the

[1] Finlayson's "Talmud," p. 237.

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ancient world with the records of our own Maternity Hospital, I find that in the latter occipito-posterior births are now only one-quarter more frequent in females than in males. This large number of males, coming into the world with occipito-posterior presentation at birth, I believe to be abnormal and an evidence of a departure in these later ages from an original physiological law in parturition. In this connection, it is interesting to note that "in Jewesses, according to the observation of Prof. Nacgelè the angle of inclination of the brim of the pelvis is considerably less than in other women, and accordingly they bear their children more easily."[1]

As regards the *sex* of the child determining a longer or shorter period of purification for the mother after childbirth, the following doctrine is laid down by the Talmud, a doctrine which it is difficult for us quite to understand:—"Avant quarante jours aucun fœtus n'est formé; au commencement du quarante et unième jour le fœtus, mâle ou female, est déjà formé; d'après rabbi Ismael un garçon est formé le quarante et unième jour et une fille le quatre-vingt-unième jour."[2] The rabbi, founding on Leviticus xii., thus held that the male is formed on the forty-first day and the female on the eighty-first, which was surely believed as a fact from Hippocratic times. Their theory was that *the slower development of the female fœtus in utero resulted in the slower process of purification in the mother after its birth.* But we may believe that the condition of robust health of the mother, which was probably the explanation of her having a *male* child, the earnest desire of every woman in those days, was also the explanation of her more rapid recovery.

These dates of the forty-first and eighty-first days are difficult to reconcile with our knowledge of the development of the organs of generation, which does not commence until after the rudiments of the principal organs of the body have appeared. The internal organs of generation first make their appearance, and for a brief period no sexual difference is perceptible in them. The external organs, which subsequently begin to be formed, are also identical to the naked eye in appearance in the two sexes as late as the fourteenth week,[3] that is, from the ninety-first to the ninety-eighth day. Had we no microscope, we could not descriminate the sex till about the ninetieth day. We have therefore to believe that the Jewish doctors could determine the sex of the fœtus at an earlier date than we can; in other words, that the sex of the child appeared sooner then than it does now.

[1] Campbell's "System of Midwifery," p. 217.
[2] "Rab. Misch. Nid.," fol. 30.
[3] Quain's "Anatomy."

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Such a keen interest was taken in this question that history records how the Greek queen, the notorious Cleopatra, made experiments to settle this point.[1] She ordered, it is said, female pregnant slaves to be killed at certain dates after conception. It was found on dissection, said some, that the sex of the male fœtus could be recognised at forty days, but the female only at eighty days. But from the following sentence it would even appear that the sex of the fœtus of either sex could be seen at forty days. "Mais les autres docteurs lui appasèrent un fait d'observation; car, dirent-ils, la reine Cléopâtre ayant condamné à mort et fait exécuter ses esclaves, on les a disséquées et on a trouvé des fœtus des deux sexes qui etaient tous less deux formés au haut de quarante jours." Obviously there was want of scientific accuracy in such barbarous experiments as these, and room for much fallacy and deception. The queen, no doubt, apart from her own curiosity in such matters, may have been induced by the Alexandrian physicians to assist them in settling this vexed and difficult point in development, on which, *according to their theory*, rested the correctness of the law regarding purification, given nearly fifteen hundred years before. Of course it is possible in these experiments they may have made their observations adjust themselves to preconvinced opinions, but it is equally possible that they were substantially correct, as in the case of the occipito-posterior presentation of the female child.

To us, not less than to these Jewish doctors, does the sexual organogenesis of the forty and eighty days present a puzzle. Amongst the early Hebrew people, when reproduction and multiplication of descendants was a matter of paramount importance, there seems to be evidence of an earlier development of the organs concerned in this process. And when we consider what physiological modifications in development may have occurred during the well-nigh three and a half millenniums that have elapsed between the giving of the law and our own time, we may well feel it unscientific to criticise. It becomes scientists at least to speak with diffidence. We know that types of disease change. Even certain types of face seem to predominate in certain centuries. Physiological processes also change. As an instance of the latter, the long period of nursing in ancient times may be quoted[2]—a wonderful change from that physiological process of to-day. The following sentence is from Judas Maccabæus, "O my son, have pity on me that bare thee, and gave thee suck *three* years, and nourished thee and brought thee up unto this age, and endured the

[1] "Rab. Nidah," p. 83. [2] Finlayson on the Talmud.

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troubles of education" (2 Mac. vii. 27). In pathology, too, the conditions known in one generation are not known in another. Dr Jardine, in a recent paper on the Glasgow Maternity Hospitals, says, "It is a very striking fact that we now have so many cases of contracted pelvis to deal with, while in the early days of the Hospital they were so exceedingly rare." And as regards obstetric practice, many a physician nowadays never meets with a case of perfectly *normal* labour. Such instances are brought forward to show what changes may occur, and to guard, as it were, an ancient physiology from the criticism a present-day physiological orthodoxy might offer, remembering that it is possible that there may be change in the relative *evolution* of organs, according to mode of life and circumstance, in the development of the human race. (*See* Appendix.)

Turning from these technical and theoretical questions, I would now, in order to fulfil the purpose of this paper, take up shortly some general points, illustrative of the state of the medical profession, in its more practical and matter-of-fact aspects at the beginning of the Christian era. Nothing remains to us from which we get so much information regarding the state of medicine *generally* as the "De Re Medica" of Celsus. This work, in eight books, derives special importance from the fact that it is the first complete medical treatise which we possess in succession to those of Hippocrates, composed four centuries earlier. Aulus Cornelius Celsus, as he is designated in the old Vatican manuscripts, lived partly before and partly after the time of our Lord, from about B.C. 25 to A.D. 45. He seems to have been a man of great culture, and had carefully studied and compiled all medical writings from whatever source. It is noticeable that, though he did not follow their opinions, he speaks with respect of the medical practice of what was to him that of the ancients. He seems to have been the only physician of note since Hippocrates, and is justly esteemed one of the most outstanding men in the ancient world for his ease and elegance in writing on medical and allied subjects. Curiously enough, all his writings, except on medicine, have perished during the barbarous ages. In our own day it is sometimes said that the opprobrium of medical men is that they are not sufficiently educated outside of their own profession. This could not apply to Celsus. But the medical field *per se* was small in his time. Quintilian gives honourable testimony to the extent of his learning. In one of his works, after mentioning the greatest geniuses that ever appeared in Greece or Rome, as Homer, Plato, Aristotle, Cato, Varro, and Cicero, he adds, "Why should I name any more instances?

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When even Cornelius Celsus, a man of moderate share of genius, has not only composed treatises on all these arts, but has also left precepts of the military art, and medicine. The bare attempt requires us to believe that he understood all these subjects; but to give perfection to so great work is a difficult task, to which no man was ever found equal."[1] Of all his writings, it may reasonably be concluded that those on medical subjects were the most perfect, as being the fruit of his special studies. Not only for beauty of Latin style, but also for medical philosophy and ethics, the study of Celsus was much recommended to the students of this University not a century ago. He was then an epistle known and read of all medical men. A contemporary of Celsus, referring to one of his writings on the subject of bees, uses this expression: "Concerning which it is impossible to surpass the diligence of Hyginus, the profusion of ornaments in Virgil, and the elegance of Celsus. Hyginus has, with great industry, collected the precepts which lay scattered in the ancients; Virgil has adorned the subject with poetic powers; and in Celsus we find a judicious admixture of both these manners."[2]

It is interesting to feel that this admiration for Celsus should be as great now as it was nineteen centuries ago, and his works still considered a classic of high order. In the matter of medical detail we can learn little. As was to be expected, his prognosis seems to have excelled his diagnosis. Like the old nurse in our Infirmary, who knew nothing of anatomy or physiology, but of whom it was said that the surgeons themselves were afraid to venture an opinion of prognosis contrary to her view of the case, so do we, in a sense, feel in the presence of Celsus. This kind of intuition in prognosis had he in a marked degree acquired by careful, nurse-like and continuous study of his patient. That he was a careful student of disease clinically may be gathered from the following sentence in his book:—"From these things it may be inferred that many people can't be attended by one physician, and that the man to be trusted is he who knows his profession and is not much absent from the patient. But they who practise from views of gain, because their profits rise in proportion to the number of patients, readily fall in with such rules as do not require a close attendance, as in this very case. For it is easy for such as seldom see the patient to count the days and the paroxysms; but it is necessary for him to *sit* by his patient, who would form a true judgment of what is alone fit to be done, when he will be too weak unless he get food," etc.[3]

His judgment as to the use or abuse of drugs and his know-

[1] Grieve's "Celsus," p. 6. [2] *Ibid.*, p. 8. [3] Grieve's "Celsus."

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ledge of human nature stamp him a born physician and a father in his profession. The partition wall of nineteen hundred years between his time and ours seems to melt away as we read the following maxims he has left us, and we can almost fancy we have the genial old man with us this evening:—"'Tis good for a sound man to diversify his way of life; to be sometimes in the country, sometimes in the city, and frequently in the fields; to sail, to hunt; sometimes to rest, but exercise himself frequently, for indolence enervates the body, labour strengthens it; the first brings on a quick old age, the other makes a long youth."[1]

Again: "The contemplation of nature, though it cannot make a physician, yet may render him fitter for the practice of medicine."[2]

"Now when there is no certain knowledge of a theory, a mere opinion about it cannot discover a sure remedy."[3]

"The failings of those who practise medicine are not to be charged to the art itself."

"The physician of experience is recognised by his not at once seizing the arm of his patient as soon as he comes to his side, but he looks upon him, and as it were, sifts him first with a serene look to discover how he really is; and if the sick man manifests fear, he soothes him with suitable words before proceeding to a manual examination."[4]

"Little minds confess nothing disgraceful to themselves, for they have nothing to lose. But to a great mind it is befitting to acknowledge even mistakes, especially when the results of medical practice are handed down for the benefit of posterity."[5]

Such aphorisms abound in the "De Re Medica."

There are many obstetric points discussed, such as the method of extraction of the child after version, the treatment of uterine hæmorrhage, etc.—interesting, but not of practical value to this Society in the light of to-day. Unlike his Jewish colleagues, Celsus paid little attention to traditional opinions and speculations. Rather was he the more taken up with the importance of nursing and general treatment. Indeed, it is interesting to note in how many cases ancient notions and treatment joined hands with modern science.

In a general survey of his works one is impressed with the truth of the maxim, "Much arises which has already perished, and what is now honoured is already declining." But is not this true in our own time? Through the dark ages that have rolled between Celsus and ourselves there have been long periods of retrogression in medical knowledge, but there have

[1] Grieve's "Celsus," p. 21. [2] *Ibid.* [3] *Ibid.*
[4] Baas' "History of Medicine," p. 161. [5] *Ibid.*, p. 161.

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appeared also not a few bright stars in the darkness. Now have we reached the day-spring of science, whose morn, with healing in his wings, has little more than dawned, a science at the touch of whose garment the gynæcologist of to-day may receive for his patient more certain relief than in days gone by, yea, in some cases, cure almost miraculous.

Appendix.

Since writing this paper my attention has been drawn to the accelerating and belating of organs in organogenesis in Ernest Mehnert's work "Biomechanik erschassen aus dem Principe der Organogenese," in which considerable light is thrown on the discrepancy in the development of the sexual organs in the Jews, before referred to. The more rapid development of these organs in the fœtus is probably racial and peculiar to the early Hebrews, in whom reproduction and replenishing the earth with people was so important. Mehnert's book is a difficult one, but Professor J. Arthur Thomson, of Aberdeen, in his review of it in *Natural Science*, May 1899, has given its gist. It is that the *rate* of growth varied in different parts of the embryo, and *increased in proportion to the physiological dignity or importance of the part or organ.* In referring to a corollary in Mehnert's biogenetic law, Thomson's words are, "That as an organ rises in physiological importance and structural differentiation, it acquires a proportional *increase* in its *rate* of development."

And the converse of this is equally true, "The organ which has lost its functional dignity, so to speak, is handicapped in its rate of development." Or in other words, "Retrogression and retardation go hand in hand."

It is interesting to find in the Talmud a statement on development confirming Mehnert's opinions, which are the outcome of advanced modern study in biological science.

CELLULAR INCLUSIONS AND DEGENERATIONS AND ENDOCELLULAR PARASITES IN MALIGNANT TUMOURS [1]

By Professor FRANCESCO SANFELICE, Cagliari

Translated by W. FORD ROBERTSON, M.D.,
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IN some recently published papers upon the etiology of malignant tumours, it clearly appears that the authors are not very expert in recognising the true endocellular parasites, main-

[1] Translated from *La Riforma Medica*, 12th and 14th October 1901, Nos. 236 and 237.

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tained to be blastomycetes by Plimmer, Leopold and myself. They tend to confound them with certain forms of cellular degeneration, or with certain cellular inclusions, which have nothing to do with the true parasitic forms. I am therefore induced to publish this note, the fruit of very many observations, in which I shall endeavour to show the differences between the cellular inclusions and degenerations and the true parasites.

The first of these recent papers on the etiology of cancer is that of Nichols (1), who has endeavoured to see the parasites in malignant tumours, to obtain, if possible, a culture of them, and, by inoculation of pure cultures of blastomycetes given to him by Plimmer and by myself, to produce cancer in animals commonly used for experiment. Nichols has found the parasites in 13 cancers of the mamma out of 16 examined. He has never found them in sarcomata. Attempts to obtain cultures from 13 cases of cancer gave negative results. The author has made inoculations with the blastomycetes given to him by Plimmer and myself, and describes the pathological picture observed in one guinea-pig and two rabbits, which died in consequence of inoculation with those isolated by me, and in two guinea-pigs which succumbed after inoculation with those isolated by Plimmer. He maintains that the appearances presented by these blastomycetes in the tissues of guinea-pigs and rabbits, are quite different from those presented by the alleged parasitic forms in cancer. He denies that the blastomycetes are capable of producing cancer, and asserts that the positive results that I have obtained in dogs are not the result of the inoculation, but are due to a coincidence. This objection, which has also been made by Baumgarten, is untenable, for the reason that I have now obtained several positive results.[1] Although the theory of coincidence may be advanced in explanation of one or two cases, it can hardly be invoked by any rational person when the positive results are numerous. Nor can it be admitted that I have wrongly interpreted the lesions produced in dogs by the inoculation of pathogenic blastomycetes, mistaking chronic inflammatory processes or granulomata for cancer, because two very competent and therefore trustworthy observers, Plimmer (2) and Leopold (3), have produced epithelial tumours experimentally in animals by inoculation of these blastomycetes. It is absolutely inadmissible that three persons working independently at the same subject can have fallen into the like error. Moreover, it is necessary to bear in mind that between the onset of a pathological process

[1] In the sixth article upon the pathogenic action of the blastomycetes, which will shortly be published in the *Zeitschrift für Hygiene*, there are described new cases of malignant tumours produced in dogs by inoculation of the *saccharomyces neoformans*.

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and the inoculation of the parasite that is the agent in the said process, there is a relation of cause and effect which is entirely wanting in the case of a coincidence.

I had the pleasure of receiving a visit from Dr Nichols, at the Institute, in February 1900, and of conversing with him for some time, and I was not a little surprised to see an account of his work published by October of the same year. From the paucity of the experiments made, it is clearly apparent that the author has given very little time to the study of the subject. Especially wanting in exactness is his statement that the parasitic bodies observed in cancerous tissues are not identical with the blastomycetes observed in the tissues of rabbits and guinea-pigs. By affirming this, he shows that he has not known how to find the true parasitic forms in cancer, and that he has mistaken for parasites certain forms of cellular degeneration to which I shall presently allude.

The identity of the true parasites of cancer and blastomycetes inoculated into the tissues of animals, is maintained by Plimmer, Leopold, Sawtchenko (4) and myself, and I do not think that it can now be placed in doubt. The illustrations accompanying Nichols' paper demonstrate clearly what I have affirmed above. The negative results of his cultures from malignant tumours are not to be wondered at, because it is known that the culture is positive only in the case of rapidly growing tumours, which contain a large number of parasites. Those who have followed this controversy are aware of the results obtained by Plimmer, and of the fact that in the examination of over a thousand tumours, he was able to obtain cultures in only a very few cases. How could Nichols obtain positive results when he limited himself to an attempt to obtain cultures from only thirteen cancers? With regard to his inoculations of the pathogenic blastomycetes into animals, it is to be objected that he has made very few experiments, and only upon animals that rarely respond to inoculation of the blastomycetes by a reaction on the part of the epithelial cells. I have never chanced to obtain new epithelial formations either in guinea-pigs or in rabbits by inoculation of pathogenic blastomycetes, as Plimmer and Leopold have done. I have, however, seen some sections of the rabbit's lung, sent to me by Plimmer, showing true epithelial new formations produced by intra-abdominal inoculation of the blastomyces isolated by him.

Another paper, more critical than original, upon the parasitic theories of cancer is that of Borrel (5). According to this author all the forms described by Nils Sjobring, Sondakewitch, Foà, Ruffer (as well as his collaborators, Walker and Plimmer), Podwyssotzky and Sawtchenko, originate from the atypical

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development of an element in the cancer-cell, namely, the attraction sphere, or, rather, the arcoplasm. This explanation, though ingenious, is quite useless, because none of the endocellular forms described as parasitic in the plates accompanying the paper have any resemblance to the true endocellular parasites of cancer.

Borrel has not comprehended that almost every one of the observers who have described the parasites of cancer as coccidia, in their anxiety to find within the cancer-cell something that would correspond to the known forms of coccidia, have described and figured along with the true parasites some forms that have nothing whatever to do with these parasites. It is precisely these pseudo-parasites that Borrel has taken into account, whilst he has entirely neglected the true parasitic forms. Therefore his criticism, being without foundation, falls like a house built on sand. I think that he has gone too far in endeavouring to interpret as developments of the arcoplasm of the cancerous cell all the forms of endocellular pseudo-parasites figured in the plates annexed to his paper; for example, the endocellular forms of pseudo-parasite depicted in Figs. 19, 20, 21, Plate V., are quite of a different nature from the others. They are clearly not developments of the arcoplasm, but cellular inclusions.

I shall now look at the criticism that Borrel passes upon the blastomycetic theory. The first objection that he makes to this theory is the following: "À notre avis, au point de vue morphologique, les diverses variétés d'inclusions, que nous avons passées en revue ne sauraient être considérées comme des levures, et la démonstration au microscope reste tout entière à faire. S'il y a des levures dans les tumeurs cancéreuses, elles ne sont certainement pas dans les cellules épithéliales."

This objection is groundless because none of the endocellular forms referred to by the author and figured in the plates can be regarded as blastomycetes; they are vacuoles of the cell-protoplasm or cellular inclusions quite different from the true parasites.

Borrel further denies that cultures of blastomycetes can be obtained from cancers, and in this connection cites the researches of Maffucci and of Sirleo, who have occasionally obtained colonies of blastomycetes, but have looked upon their presence as accidental because some control plates exposed at the same time to the air of the laboratory have produced similar colonies. He cites only the negative results of these authors, which support his thesis, and he ignores the positive results obtained by Plimmer and Leopold, two observers quite as capable as the former.

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As I have already stated in other papers, cultures can easily be obtained from tumours of rapid growth, which contain a large number of parasites, but which are not of very frequent occurrence. Plimmer, who has examined more than a thousand tumours, met with only nine in which there were large numbers of parasitic bodies, and from only one of these nine tumours did he succeed in obtaining a culture. It is quite useless to attempt to obtain cultures from tumours of old standing. In such tumours the parasites, besides being very scarce, present themselves in the form of fuchsine bodies, or Russell's bodies, which are no longer cultivable, because, as I shall show in a forthcoming paper, they are merely chromatic residua of the blastomycetes. If, after being subjected to a special treatment which destroys their vitality, the blastomycetes are inoculated into dogs or cats, and if the tissues of these animals are then examined after a certain period, numerous fuchsine bodies are to be observed quite similar to those found in malignant tumours. I have obtained such results by inoculating not only with dead pathogenic blastomycetes, but also with those of a non-pathogenic character, after having subjected them to the same treatment. The appearance presented by these dead non-pathogenic blastomycetes in the tissues was identical with that of the pathogenic blastomycetes. These observations serve to explain how it is that fuchsine bodies have sometimes been found in morbid tissues of quite a different nature from malignant tumours. The blastomycetes that commonly occur on the mucous membranes and on the skin have penetrated into the interior of the tissues in consequence of lesions affecting the epithelium, and have there died, and their protoplasm has then assumed the typical form of Russell's bodies. Therefore the fact that these bodies have been found in normal tissues and in morbid tissues other than malignant tumours, does not detract from the importance of their constant presence in cancer. As well might one say that no importance is to be attached to the presence of tubercle bacilli because other bacilli, quite similar, are found that are capable of producing pseudo-tuberculosis.

Borrel also shows himself to be sceptical as to the positive results that I have obtained in dogs by the inoculation of the *saccharomyces neoformans*. Whilst he does not admit that this organism is capable of producing new epithelial formations in dogs, he credits the results obtained by Wlaeff, who by inoculating a blastomyces into the peritoneum of a rat succeeded in producing a cystic adenoma, developed at the expense of the intestinal epithelium included in the tumour. Now it is difficult to understand why Borrel, whilst admitting that in the experi-

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ment of Wlaeff blastomycetes were capable of giving rise to a new epithelial formation at some distance, should deny that in the results obtained by myself the *saccharomyces neoformans* lying in contact with the glandular epithelium produced a proliferation of this tissue. Blastomycetes, like all other micro-organisms, exert their pathogenic action by means of their products, which are capable of stimulating both the cells which contain the parasites and those which lie at some distance away. In both instances the epithelial proliferation can only be regarded as a reaction to the stimulus exerted by the parasite.

With regard to Borrel's *a priori* affirmation that it cannot be admitted that a blastomyces is capable of penetrating into the interior of an epithelial cell, it is sufficient to mention the observations of Plimmer and of Leopold, both of whom, in confirmation of my own researches, have found true parasites in the interior of epithelial cells. In order to convince himself upon this point, Borrel need only inoculate a pathogenic blastomyces upon the corneal epithelium of a dog by scarification. If, after a time, he makes some sections, he will have an opportunity of seeing the blastomycetic clumps in the interior of the proliferated cells, and will thus be persuaded of the inaccuracy of his *a priori* affirmation. If, at least, he had read the work of Plimmer, who was the first to make inoculations of blastomycetes upon the corneal epithelium of rabbits, and who has seen the blastomycetes in the proliferated epithelial cells, he would not have shown, among other things, that he has undertaken to deal with a subject for the discussion of which he was hardly qualified.

Recently Gaylord (6) has published a paper which deserves to be considered because of the importance of the results obtained, though not on account of the manner in which he has interpreted them. With fluid taken aseptically from the peritoneal cavity of a person affected by adeno-carcinoma, probably originating from the vermiform appendix, he inoculated the peritoneal cavity of a dog and of a guinea-pig, and the jugular vein of a guinea-pig. The dog and the guinea-pig inoculated in the abdomen did not show anything of importance. The guinea-pig inoculated in the jugular vein, killed after some time, presented new epithelial formations in the lung. This result is identical with that obtained by Plimmer. Gaylord has made a microscopic examination of a large number of tumours, and has almost constantly found parasitic forms, perfectly similar to those described by Plimmer, which, however, he regards as belonging not to the blastomycetes, but to the protozoa. It clearly appears from what the author has written

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and from the accompanying photographs, that he has not known how to recognise the parasitic forms described by Plimmer, and that he has mistaken certain forms of cellular degeneration for parasites. This is demonstrated by what Gaylord states upon page 513. Contrary to the opinion of Plimmer, Leopold and myself, he maintains that the forms recognised by him in malignant tumours are not blastomycetes, because having inoculated them into animals he found that they had various forms. This contention is the logical sequence of the error into which he has fallen of mistaking cellular degenerations in malignant tumours for parasitic forms. The morphological identity of the parasites of cancer with the blastomycetes has already been so clearly demonstrated by Plimmer, Leopold, Sawtchenko and myself, that I do not think that doubt can any longer be cast upon it by anyone who has an accurate knowledge of the appearance of the true parasites in cancer, and of the manner in which the pathogenic blastomycetes present themselves in the tissues of the lower animals. The grounds upon which Gaylord concludes that the forms observed by him in malignant tumours belong to the protozoa are therefore far from convincing Simply because he has noted a certain resemblance between the parasites of vaccinia inoculated upon the cornea of the rabbit and the forms he has found in cancer, he concludes at once that the parasite of cancer is a protozoon. He completely forgets that no one has yet furnished a strictly scientific demonstration that the parasites of vaccinia belong to the protozoa. Guarnierni has merely supposed it, and not by any means demonstrated it.

The epithelial tumours that I have employed in making the following observations were fixed and hardened by myself in various fluids. After many trials I have been able to satisfy myself that the addition of acetic acid to the common fixing fluids makes the capsule of the parasites more evident, and therefore renders it more easy to distinguish the blastomycetes, especially when endocellular, from the common cellular inclusions and degenerations. It is necessary to add acetic acid to the fixing fluid in the proportion of from two to three per cent. As to staining, I prefer to carry it out upon sections fixed upon the slide. I have tried various recently advocated methods, but on account of the sharpness and clearness with which the parasites are shown, I have ended by always giving the preference to staining with Ehrlich's fluid and with carbol fuchsine diluted with three times its volume of distilled water. In order to fix the stain in the parasites, it is always necessary to use a mordant, such as oxalic acid or a weak solution of iodine in an iodide. If, after the action of the mordanting

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solution, care is taken to decolourise accurately with alcohol, the violet colour will remain only in the parasitic forms. If, however, a little violet colour is retained by any of the tissue elements, it will not be very difficult to distinguish them from the blastomycetes when we know exactly the forms that the latter assume. It is especially necessary to remember the cellular inclusions due to mobile mesodermic elements, because in certain stages the inexperienced eye is liable to mistake them for endocellular parasites belonging to the protozoa. When a mobile cell penetrates into the interior of a cancer cell it becomes surrounded by a clear halo, which at first appears as a delicate ring around the protoplasm of the cell-body of the mobile element, and afterwards gradually enlarges so as to assume the aspect of a large vacuole. At first the nucleated cellular element preserves its original form, but afterwards this is lost, the element becoming deformed and undergoing a process of dissolution, which is very easily followed if many sections of a cancer are examined. In this process of dissolution the first part to disappear is the cell-protoplasm. Next the nucleus loses its normal form, and may sometimes be easily mistaken for the vesicular nucleus of a protozoon. The first impression one then obtains is that a small amœboid body has penetrated into the substance of a cancer cell. The element continues to disintegrate, and the chromatic substance of the nucleus assumes the form of granules of different sizes, which are either free or contained in a fundamental substance, perhaps a residuum of the cell-body. The whole of the chromatic substance of the nucleus may disappear, and then nothing is found in the interior of the vacuole but a protoplasmic residuum of varied form, and only faintly colourable.

When the chromatic substance of the nucleus has become granular and is contained in a faintly stained protoplasmic mass, we have what Borrel would regard as a development of the arcoplasm, but a careful examination of the various forms assumed by the mobile element in the course of its disintegration saves the observer from such an error. Certainly no observer would mistake a normal mobile element contained in a vacuole of a cancer cell for a parasite, but when a nucleus with fused chromatic substance appears as a little coloured globule in the centre of the cell-protoplasm, surrounded in its turn by the clear halo constituted by the vacuole that the mobile element has excavated in the protoplasm of the cancer cell, the eye that is not well practised in the recognition of the true parasites may easily confound it with these parasites, especially if the chromatic substance of the nucleus is stained violet.

It is of much interest to study certain degenerations that

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occur in the protoplasm of the cancer cells, because they have been described as endocellular parasites by some observers, although they have only a very distant resemblance to the true parasites. It is especially to be noted that none of these forms of degeneration ever take a violet colour when the sections are stained by the method of which I have spoken. They appear as hyaline areas of various shapes, with or without contents which are stained very faintly and which therefore need not be confounded with chromatic residua and chromatic portions of the nucleus. It is exactly for this reason that I think that these forms cannot rightly be explained upon Borrel's theory of development from the arcoplasm.

The hyaline areas without contents assume various shapes. They may be single, small, of medium size, or so large that the protoplasm of the cell is made to disappear almost entirely and the semilunar nucleus seems as if applied directly to the hyaline body. Many of these last forms are seen in the photographs which accompany Gaylord's paper, and are figured as parasites.

At other times many hyaline spots may be seen in the protoplasm of the cancer cell, either at some distance from each other or closely approximated. They are always limited by the cellular protoplasm and never have a coloured capsule. This is a very important point and one upon which I specially insist, as the entire absence of a membrane or capsule constitutes the chief difference between these pseudo-parasite forms and the true parasites.

The study of the single and multiple areas of degeneration with contents is also of interest. Sometimes the contained substance has an irregular form, with prolongations that recall the pseudopodia of small amœbæ. In other instances the contents consist of a group of very minute granules. Sometimes these granular contents are embedded in a fundamental substance stained less deeply than the granules. Still more interesting is the study of the multiple spots of degeneration. In some cancer cells there are three areas of degeneration, and in the interior of each of them protoplasmic masses coloured red by the carbol fuchsine and having near the centre a more deeply stained granule. In these endocellular forms there is no trace of a membrane. The contents never assume a violet colour, and they do not present any analogy to blastomycetes. They take origin from the protoplasm of the cell itself, and they are, in my opinion, a residuum of the protoplasm which has not yet undergone degeneration.

In other cells there are to be observed small areas of degeneration lying close together, each containing a minute

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granule coloured red like the protoplasm of the cell. In other instances these areas are at some distance from each other, and they do not always contain the faintly stained granule in their interior.

Only when the protoplasmic mass contained in the interior of one of these areas is diffusely and deeply stained of a violet colour, is it liable to be confounded with a young blastomyces which, having penetrated into the interior of the cancer cell, may become surrounded by a clear zone.

Let us now see the forms that the blastomycetes most commonly take in the interior of the cancer cells. It is necessary to distinguish the body and the capsule of the blastomyces. The body may be homogeneous and either intensely or faintly stained, or two portions may be distinguishable, the one more deeply stained than the other. The more deeply stained portion may form a little central mass surrounded by the other portion, or it may consist of a central granule and concentric ring, or of a rounded central mass encircled by a less deeply stained halo, or, lastly, of a small granule surrounded by a less deeply stained halo.

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In order to explain the various forms of capsule presented by blastomycetes in cancer cells and in the tissues of animals that have died in consequence of inoculation of pure cultures, it is necessary to describe the appearance of these organisms when taken from the body and examined under the microscope in fresh, unstained preparations. They are surrounded by a highly refractile membrane which varies greatly in thickness. Sometimes external to this refractile membrane there is a hyaline membrane, likewise of variable thickness. The internal membrane is aptly denominated "refractile," the external "hyaline." The two together represent the capsule of the parasite. The external hyaline membrane is merely a product of the internal refractile one. This fact can easily be demonstrated in fresh preparations by allowing a drop of acetic acid to run under the cover-glass. When the acid acts upon a blastomyces which shows only a refractile membrane, a hyaline membrane is seen gradually to form at the exterior, whilst at the same time the refractile membrane diminishes in thickness. When the acid acts upon a blastomyces which presents two membranes, the hyaline membrane is seen to increase in thickness at the expense of the refractile membrane. In stained preparations the refractile membrane is coloured intensely by the aniline dyes, whilst the hyaline membrane is coloured less deeply. Sometimes the protoplasmic body of the parasite appears to be surrounded by a single membrane which stains faintly with the aniline dyes. In this case it is necessary to suppose that the

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refractile membrane has swollen up and become entirely transformed into a hyaline membrane, or that a delicate refractile membrane is blended with the central chromatic part of the parasite itself. Sometimes the parasite in the interior of the cancer cell appears intensely coloured and no membrane can be distinguished. In this case the blastomyces has only the refractile membrane, which, being stained deeply, blends with the body of the parasite which is also deeply stained. When the blastomyces has this form, and has hollowed out a niche in the protoplasm, it may easily be confounded with a mobile element of which the cell-body has disappeared and the chromatic substance of the nucleus has undergone a process of karyolysis. It is of little consequence if these forms, though essentially parasitic, are not counted as being so, because along with them there are found other forms which are provided with capsules, and regarding the nature of which there can be absolutely no doubt.

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Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

SURGERY

THE VALUE OF TETANUS ANTITOXIN

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As I hope to discuss this subject more fully on another occasion, I may be allowed here merely to summarise some of the more important communications which have recently appeared. By far the most valuable is a long series of articles by Steuer of Vienna in the *Centralblatt für die Grenzgebiete der Medizin und Chirurgie*, 1900; but there is also a paper by Abbe in the *Annals of Surgery*, 1900, which, of course, merits consideration from the importance attaching to his name as

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a surgeon, and one by Moschcowitz, with an interesting, but hardly convincing, discussion of the pathogenesis, mortality, and serumtherapy of the disease. His paper also contains a collection of the literature, though not so full a one as Steuer's.

Tetanus contrasted with Diphtheria.—Most practitioners agree in considering that the serum treatment of diphtheria has been a marked, almost an unqualified, success (though I, for one, am not yet ready to admit this), and this conclusion might well be the foundation for bright hopes with regard to the antitoxin treatment of tetanus. But diphtheria may be looked upon as a disease which at its beginning is mainly a local affection, from which, only at a late date, poison spreads over the system. But when the first symptoms of tetanus appear, they themselves are a signal that the poison *has already* spread itself over the body. Serumtherapy, then, might well be useful in diphtheria, but of no avail in tetanus. "The patient with tetanic symptoms is not beginning to have tetanus; but is beginning to die of tetanus" (Marchand).

What is the value of subcutaneous or intravenous injection of the serum?—None, or almost none, according to Steuer. Here are his conclusions:—

1. If tetanus is already evident the serum has no curative influence on the chain of symptoms. It scarcely is able to prevent the appearance of new symptoms. By acting on the poison which is circulating in the blood it may be supposed to prevent any bad effects which might emanate from that, though even in this way it seems to have little effect on the intensity of the disease, which is probably determined already by the amount of poison absorbed during the incubation period. This conclusion is arrived at from theoretical considerations, from the failures of experiments on animals, from the "unanimous" testimony of statistics, from observation of individual cases, and from the testimony of almost all veterinary practitioners.

2. Even early injection of serum, say within thirty-six hours after the first symptoms have appeared, cannot be proved to have any good result.

3. No distinction can be made between the effects of the various antitoxins.

4. Bad effects are almost never observed as a result of the injections.

5. Very good results are obtained when the injection has been made as a prophylactic measure in cases in which tetanus is to be expected.

It must be remembered that Steuer reaches these conclusions after what seems to have been a most careful search through the

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literature of the subject, and a most discriminating analysis of the material therein contained. I fear this verdict must be considered a just one. No doubt many writers, some of them eminent enough perhaps, take quite a different view, but in many cases their conclusions are reached after but a limited survey, and that often of a few more or less successful cases in their own practice. Abbe's paper, for instance, has a cheerful ring about it, but his conclusions are based on the results in nine cases treated by him with serum (intracerebral injections); "this limited experience," he writes, "leads me to regard it as a valuable adjunct in the scientific treatment of this grave malady." Moschcowitz, too, seems to take a similarly hopeful view of the antitoxin treatment. How is it that Steuer reaches such a different conclusion? By fixing the mortality of tetanus in the pre-serum days at a much lower figure than these other writers do. Abbe and Moschcowitz quote 80-90 per cent. as the mortality in the pre-serum days, while Steuer says that after a careful survey he finds the average mortality of all the older statistics runs from 40-50 per cent. As Steuer states the mortality of serum-treated cases at 41 per cent. (and Moschcowitz agrees), it will be seen that he has good grounds for the unfavourable verdict he pronounces on the antitoxin treatment.

It must be remembered, too, as more than one writer points out, that the literature which discusses a new method of treatment will almost certainly contain a much larger proportion of the records of successful than of unsuccessful cases that have occurred, practitioners forgetting that the failures are as important, from the statistical point of view, as the successes; therefore probably the mortality of the serum-treated cases is higher than would at first sight appear.

The Theory of Intracerebral Injections.—The cells of the brain and spinal cord seem to have a special affinity for the tetanus toxin which "combines with" them; antitoxin injected into the blood can neutralise, indeed, the toxin still circulating there, but it fails to reach—or, at all events, to reach in a sufficiently concentrated form—the toxin in the central nerve cells; therefore inject the antitoxin directly into the brain (or spinal cord). The results of some interesting experiments, more or less supporting each other, might perhaps just be mentioned here.

(a) *Animals which had been immunised, nevertheless took tetanus, if a minute dose of tetanus toxin were injected into the brain, even though antitoxin could be found free in the blood.* Roux and Borrel (2) explained this by the theory that the nerve cells unite firmly with the toxin, but feebly with the antitoxin;

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the antitoxin remains free in the blood and neutralises the toxin there, but not the toxin in the nerve cells.

(b) *The blood of a patient who had been treated with antitoxin did not produce tetanus when injected into mice; and yet pieces of the patient's spinal cord implanted into mice always produced tetanus.* Along with that interesting experiment read this—the blood of patients who have been treated with antitoxin has been proved by experiment to have lost its poisonous properties; but, in spite of this, many such patients died. That is to say, the toxins had already accumulated in one particular tissue, they were "anchored" to the cells of the brain and spinal cord [Blumenthal (3)].

(c) *Antitoxin injections into the brain or spinal dural canal of animals proved useless, once the first symptoms of tetanus had appeared.* Blumenthal and Jacob (4), who made the experiments, found that the injections not only failed to save the animals, but were useless to produce even an improvement in the symptoms. This proved, in their opinion, that, once the symptoms have appeared, the antitoxin acts only against the toxin in the blood, not against the toxin which has combined with the central nerve cells.

(d) *Contradictory result. Let the first symptoms of tetanus appear in an animal; Roux* (5) *has succeeded in saving such by injecting antitoxin into the brain, even though subcutaneous injections had already proved in vain.* Roux states that it is absolutely indispensable to inject the antitoxin "as early as possible," if a favourable result is to follow. It can only follow if there are "still unoccupied territories" in the brain and cord to be annexed by the antitoxin.

(e) *Many animals can be saved if the antitoxin is injected immediately after the toxin, before symptoms have begun to appear.* In other words, the serum injections may be a good prophylactic measure. The failure in using anti-toxin as a *curative* agent in man, is due to the fact that we dare not use it till tetanus has declared itself—that is to say, till it is too late.

Comparative Value of Various Methods.—Von Török's (6) experiments on animals led him to arrange the different methods in the following order of efficiency: the intracerebral is the most efficient, then the intraspinal, the intravenous and the subcutaneous, in that order.

Methods of Operating for Intracerebral Injection.—(*a*) Roux and Borrel (7) trephined, and then injected slowly 1½-3 c.c. at the bottom of the second frontal convolution, pushing the needle 5-6 cm. deep into the brain. Church, Marchand, and others followed this method.

(*b*) Semple (8) exposed the cranium and then bored a hole

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through the bone; through this he injected the serum anterior to the motor region, using a blunt-pointed syringe to avoid injury to blood-vessels.

(*c*) Kocher (9) describes an operation which he had thrice performed. He anæsthetised an area 3 cm. outside the bregma with cocain, pushed the drill through the scalp till it reached the bone, and then bored through the bone. This hit the region of the præcentral fissure between the upper and middle frontal convolution. He injected the serum through this into the lateral ventricle, thus avoiding injury to the motor centres.

Results.—Steuer has collected the records of 65 cases of intracerebral injection with 44 deaths—a mortality of 67·7 per cent., while the mortality in cases treated by the subcutaneous and intravenous methods is not higher than 43 per cent. This may partly be explained by considering, firstly, that only serious cases have been treated by this more serious intracerebral method; and, secondly, that the latter method has been had recourse to mostly in cases which had not benefited by the subcutaneous or intravenous injections.

In various cases a careful scrutiny hardly permits the favourable opinion reached by those who furnish the records. Heubner (10) says that "improvements followed each injection"; but the child died on the third day. Chauffard and Quénu (11) ascribe the cure in their case to the serum; but it is to be noted that the tetanus was worse after the injection, and that improvement began *seven days later*. Forgue and Roger's (12) case was one of mild tetanus. And so on with others, though of course some cases, such as Semple's, are more convincing.

Bad Effects and Dangers of Intracerebral Injection.—Insomnia for a week, and delirium are mentioned by Chauffard and Quénu (13). In a case recorded by Hekel and Reynès (14) the pulse fell during the operation from 110 to 50, and the breathing from 40 to 30 in the minute. The patient died eventually after other injections; nothing abnormal was found in the brain after death.

"Not infrequently" death took place a few hours after the operation "without a cause being found for it." Death occurred in one case [Mongour and Rothamel (15)] six hours, in another [Reclus (16)] twelve hours, and in another [Delmas (17] thirteen hours after the operation. Several similar cases are) recorded.

In four cases of Pitha's (18) there were no undesirable effects seen during life. But the *sectio* revealed areas of laceration varying in size up to that of a hazelnut, with punctiform hæmorrhages, and in one case a cyst containing bloodstained serum.

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In several cases the *sectio* proved that death was due to the injection. In a case recorded by Robert (19) the patient died sixteen hours after the injection, and at the *sectio* there was found under the cortex of the brain a cavity the size of a walnut filled with freshly coagulated blood.

Gibb (20) records a case in which the patient recovered from the tetanus, but died three weeks after the injections with symptoms of cerebral abscess. The *sectio* confirmed the diagnosis; in each frontal lobe an abscess was found which had ruptured into the lateral ventricle. This accident happened despite strenuous antiseptic precautions.

Many cases of sub-dural injections into the spine are recorded, followed by no unpleasant manifestations.

Steuer reaches the following conclusions:—

Intracerebral injections have no influence in cases of pronounced tetanus.

The procedure is not without danger.

Spinal sub-dural injection is no more efficient; it is less dangerous.

Kocher's method of operating is the best.

I shall not deal here with injections of carbolic acid, of corrosive sublimate, or of brain emulsion, which last is at least an interesting and ingenious idea.

We must always remember that cases of tetanus vary as widely as possible in the severity of their symptoms, and in the ultimate issue. Some cases are severe, and these seldom recover; others are comparatively slight, and many cases are not fatal. In studying cures which have *followed* antitoxin treatment, we must ask, "Would the cases have recovered without the injections?" This can only be answered by comparing the statistics of the antitoxin and the antitoxin days. If Stener is correct in his appreciation of the former statistics, then little value can be claimed for the serum treatment.

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GYNECOLOGY AND OBSTETRICS

CÆSAREAN SECTION

By J. W. BALLANTYNE, M.D., F.R.C.P.Ed.,

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SINCE the improvement of the technique of the Cæsarean section and the consequent fall in the mortality accompanying the operation, there have been many noteworthy advances in connection with it. For instance, the operation has been recommended for and employed in morbid states in which it was previously never dreamed of. Examples of this are afforded by placenta prævia and eclampsia.

With regard to *placenta prævia* it has been generally overlooked by writers on the subject that Lawson Tait advocated Cæsarean section for its treatment in 1890. The following are his words as reported in the *British Medical Journal* (March 22, 1890):—"If I had to deal with a case of complete placenta prævia from the beginning of labour, and could carry out what I believe would be the ideal of surgical treatment of this condition, I should amputate the pregnant uterus. I should thereby save the child with certainty. I should relieve the mother with perfect safety from death by hæmorrhage, and, by removing all the tissues in which large suppurating venous sinuses were present, I believe I should relieve her with almost equal certainty from the secondary risks." These sentences are quoted because although Lawson Tait is referred to by recent writers as having operated on a case in 1898, his much earlier suggestion seems to have been lost sight of. E. Gustav Zinke (*American Gynæc. and Obstet. Journ.*, xix. 334, Oct. 1901) has gathered together the recorded cases in which Cæsarean section has been performed for placenta prævia. He gives the credit of having first recommended the operation on theoretical grounds to Huston Ford, of St Louis, but as his recommendation appeared in September 1892 it was evidently preceded by Lawson Tait's. Eight cases in all would appear to have been reported in which Cæsarean section or the Porro operation were

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performed for placenta prævia. With regard to the case of Hypes and Hulbert, no particulars are forthcoming save that it was done under very unfortunate circumstances, and that both mother and child were lost. In the second case, that of J. M. Sligh (1891), the hæmorrhage had been going on for seven days, and there was malignant disease of the cervix; there is little need for surprise that the mother died (the fœtus had been already dead for two days). In the remaining six cases (those by Bernays, Lawson Tait, Donoghue, Hare, Covington, and Gillette) there was but one maternal death, and no fœtal mortality. In all these eight cases the placenta was centrally situated, in two of them the Porro operation was performed, and in six the Cæsarean section; there were three maternal deaths and two fœtal. The author argues that the first two cases ought not to be included; if that be done, then there is one maternal and no fœtal death in six cases (or 17 per cent. maternal mortality). Statistics are given showing an average maternal mortality of 25 per cent. and a fœtal one of 65·21 per cent. in placenta prævia treated by other means than Cæsarean section; while the results of sixteen operators in Cæsarean section carried out for various indications give a maternal mortality of 4·14 per cent. and a fœtal of 14 per cent. Zinke thinks, therefore, that in the treatment of placenta prævia in the past too little value has been placed upon fœtal life; and he believes that Cæsarean section performed for this complication of labour gives a better chance both for mother and fœtus. Of course the mind of the profession has not crystallised on this question yet; but such papers as Zinke's are valuable as marking progress. Placenta prævia is not uncommonly associated with marked degrees of contraction of the pelvis, and in such cases the Cæsarean section might certainly be carried out, and the results obtained would materially aid the profession in forming its opinion as to the section in central placenta prævia with a normal pelvis.

C. Jewett (*American Medicine*, ii. 488, Sept. 28, 1901) attempts to settle another question arising in connection with Cæsarean section, viz., its place as contrasted with *symphysiotomy*. He points out that symphysiotomy compares unfavourably with its rival in several particulars. It does not effect delivery, but merely prepares the way for it; its utility is limited by the very narrow range of obstruction within which it is applicable; and its after care is more exacting and more prolonged than that of Cæsarean section. On the other hand, the disadvantages and dangers of non-union of the symphysis, of suppuration of the wound, and of injury to the sacro-iliac joints, have been much exaggerated. Summing up, Jewett thinks that as an emergency operation in neglected cases, and especially after fruitless

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attempts with forceps, symphysiotomy may save both lives when abdominal section would be contra-indicated. It is still a useful operation within a limited range of pelvic contraction; but axis traction forceps, with the aid of posture, should always be tried before resorting to symphysiotomy. Its results would be much improved by limiting it to pelves with a conjugate of not less than 7·5 cm. in simple flattening, and 9 cm. in general contraction. When the pelvic space permits, it should replace Cæsarean section in the presence of exhaustion. Within its proper field, symphysiotomy is better than Cæsarean section for an operator of little experience in abdominal surgery.

Edward Reynolds (*American Medicine*, ii. 489, 1901) discusses the circumstances which render the elective Cæsarean section justifiable in the interest of the child alone. He contrasts the operation with symphysiotomy, but more especially with the *induction of premature labour*, which he believes has a fœtal mortality of 50 per cent. Reynolds is of opinion that craniotomy to the living child is preferable to incurring any markedly increased risk to the mother's life, but he thinks that in the present state of the obstetric art there are few cases in which the operation preferable to the child cannot be adopted without any considerable increase of risk to the mother. Cæsarean section, however, when performed late in labour, or in the presence of infection, has too high a mortality to be justifiable in the interest of the child alone; but when performed on a healthy woman early in labour for merely mechanical indications it has, in skilled hands, no mortality other than the fractional percentage incident to all considerable operations. Symphysiotomy has inconveniences and a high morbidity rate, but is better than craniotomy or prolonged and forcible high forceps work, and it is to be, therefore, the operation of choice in a limited number of neglected cases in which the pelvic contraction is such as to make extraction difficult or impossible without symphysiotomy, but safe or easy with it. The induction of premature labour has too high a fœtal mortality to be placed in opposition with Cæsarean section done at the beginning of labour and in favourable cases. But Reynolds believes that *late* Cæsarean sections involve an awful risk, and he would then rather do craniotomy on the living child. The section, then, ought to be done as a primary operation, but it is admitted that it is difficult to decide on the suitable cases beforehand. Pelvimetry is of great value, but is not infallible. "There is probably no one among us who cannot remember gross errors in estimating the conditions of a given case. We have all expected to do major operations, and have seen the cases delivered by natural, perhaps even easy, natural labour." Reynolds does not believe that we have to-day

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"any really adequate means of determining the mechanic relations between a given head and a given pelvis, except by the actual test of labour." Yet he recommends that Cæsarean section should be done early in the first stage, and is never permissible after the woman has been through a prolonged and severe second stage. He gets out of the difficulty which he thus made for himself by the following plan. In the doubtful cases where pelvimetry is insufficient to settle the question, he prepares for the abdominal operation, and awaits the onset of labour pains. Then under ether he pushes the head down into the brim, and estimates its size. If there is still doubt, he dilates the os, applies the high forceps, and draws the head gently into the brim, and now with the fingers accurately measures the head (its consistence, shape, and relations), and finally determines whether it is a case for Cæsarean section or for forceps alone. It must be admitted that Reynolds pushes matters very far, as a result of his exclusion of the induction of premature labour; it may be questioned whether the results *quâ* the infant are so serious in that operation as he regards them.

On the other hand, there are not wanting those authors who prefer the induction of premature labour (with or without symphysiotomy) to the best performed Cæsarean section at the full term. Among these is G. Zirolia (*Archivio di ostet. e ginec.*, viii. 548, Sept. 1901), who argues strongly in favour of the induction of labour, which he calls "gynecological intervention," and truly prophylactic. With the improvements now available for the rearing of premature infants and the low death-rate (6·5 per cent., Maygrier) among them, it is more than likely that the induction method of dealing with narrow pelvis, perhaps in conjunction with Prochownick's dietetic treatment, will continue to hold its own against Cæsarean section and all other plans.

DISEASES OF CHILDREN

CASES OF VOMITING ASSOCIATED WITH ACETONÆMIA IN CHILDREN

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IT must happen to most practitioners to meet, from time to time, with urgent cases of vomiting which cause perplexity owing to the obscurity of their causation. The vomiting is accompanied not only by constipation but also by severe nervous symptoms; and it has considerable resemblance, on the one hand, to cerebral

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vomiting, and on the other, to that associated with intestinal obstruction. After causing great anxiety, it ceases rapidly, and unexpectedly, within a few days.

Attacks of this kind which tend to recur at varying intervals have been described by some writers as "Cyclic or Recurrent Vomiting." In an interesting paper, in the November number of the *Arch. de Méd. des Enfants*, M. Marfan describes a group of such cases which he has found to be associated with acetonæmia. These he regards as forming a distinct clinical group, and one which has not hitherto been clearly enough distinguished.

The condition, he tells us, is almost entirely confined to town-bred children between one and ten years old, and rarely occurs in hospital practice. The symptoms set in in the midst of perfect health. The child becomes languid and dull, complaining perhaps of slight pain in the back and head, and his appetite fails. After some hours, or at least within a day or so, vomiting sets in, accompanied from the first by a penetrating odour of acetone in the breath. The vomiting is the main symptom and, once begun, it lasts till the end of the attack Everything, even pure water, is vomited almost immediately. Even when the patient has taken nothing for a long time, he continues to vomit or at least to retch. The smell of acetone (which is like that of chloroform mixed with a little acetic acid) is sometimes so pronounced as to be felt by anyone entering the sick-room ; and it is always readily detected at the bedside even by the patient's friends. The same odour may sometimes be felt in the freshly passed urine, but there it is fainter and less persistent. The presence of acetone in the urine, however, can always be proved by what is called "Lieben's test" ; there is no albumin or sugar present. As the attack progresses, the urine becomes pale and scanty. The child soon begins to refuse all food or drink, possibly from fear of setting up vomiting. The tongue is normal at first, but gets dry and raw after two or three days. There is no distention of the stomach and no pain ; the abdomen tends to be indrawn. There is nearly always constipation, but enemata result in normal motions. Generally, the rectal temperature remains normal, or thereby ; it rarely rises above 100° F. The pulse, although usually normal at first, becomes very feeble after two or three days. The nervous symptoms are chiefly slight prostration and drowsiness alternating with irritability. Consciousness is always retained, and the headache which is present at first passes off afterwards. There are no convulsions and no contractures. The respiration is sometimes slowed and it is often irregular and interrupted by deep sighing. The heart and lungs are normal.

After the child has been ill for three or four days, his nutri-

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tion suffers severely. He becomes emaciated, the belly is retracted, the skin shrivelled, the face pinched, the eyes hollow, the nose sharp, the lips drawn. The facies, in fact, is like that of cholera to a mild degree. The disease generally lasts for five or six days (3—14); but its course is not always regular. There may be short periods of remission of the vomiting.

Recovery is generally rapid—almost instantaneous. The infant who, a few moments before, was vomiting everything, suddenly becomes capable of retaining and digesting undiluted milk and soups. At the same time, the odour of acetone often passes off; it may, however, last for a day or two longer. The acetone is longer in disappearing from the urine. When the children have relapses, it may even be detected there as long as two months after the crisis, the health seeming perfectly good at the time. The convalescence is extremely rapid, all traces of the malady passing off within two or three days. Relapses sometimes occur; they are, however, far from being the rule. When they do occur, it is generally at pretty long intervals—more than twelve months. In some instances, several members of a family have been simultaneously affected.

The cause of the vomiting is, as yet, entirely unknown, but it has nothing whatever to do with the diet. It may be met with in the most carefully-nurtured children. The mere presence of acetonæmia has of itself no precise significance. Like glycosuria it is met with under various circumstances. Like it also, however, it may have a very definite meaning if met with as one of a certain group of symptoms.

M. Marfan draws attention to the striking resemblance between the clinical features of the cases he describes and those of "cyclic vomiting." In spite of certain differences he is evidently inclined to regard the two conditions as probably identical.

The diagnosis is generally easy enough if you only know about the malady, but it may be mistaken for gastric dyspepsia or for tubercular meningitis. The sudden onset of the symptoms, without prodromata and without antecedent emaciation, is characteristic. There is also only slight and temporary headache, and the consciousness is unimpaired. The physiognomy is normal at first, later, like that in cholera, but never that associated with meningitis. The vomiting instead of abating continues to the end to be the main symptom.

The prognosis is good. All the reported cases, except some doubtful ones, have ended in recovery.

The treatment is very simple. At first nothing is allowed but iced sugar-water or equal proportions of milk and water, also iced. These are given hourly in dessert-spoonfuls. When

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the vomiting diminishes, the milk is used less diluted and in larger quantities. When it ceases pure milk is given for a day, then an egg or soup is added, and by the third day the patient may be allowed ordinary diet.

The only medicine recommended is a mild alkaline laxative (*e.g.* magnesia), and the bowels should be emptied once a day by a simple enema. In cases where the symptoms are unusually prolonged (past the fourth day) and there is great prostration, rapid and striking improvement may sometimes be obtained by the hypodermic injection of an ounce or two of a ¾ per cent. salt solution.

PATHOLOGY

By JAMES MILLER, M.B.

The Hæmamœba of Leukæmia.—One is a little sceptical nowadays about newly found intracellular protozoa, especially as the latest discoverer in these regions was proved to have mistaken small pieces of cork for a new organism. Professor Löwit's paper, however, which has recently appeared in the *Zeitschrift für Heilkunde*, on the Hæmamœba of leukæmia magna, is so scientific and thorough, that one is bound at least to test the accuracy of his statements oneself before pronouncing judgment.

First as to the methods of preparing and fixing the blood films. The film must not be too thin. It is better not to use two coverglasses, but, having secured a small drop of blood from the finger, to spread it out with a platinum needle, if possible in a single stroke. These precautions are necessary, as the organism is so easily damaged. The preparation is then dried in the air, and fixed for two hours at 120° C. The author here remarks that the preparation of the film requires some practice.

Two methods of staining the films are recommended by the author. One is not elective, staining as it does the basic granules of the leucocytes as well as the parasite; the second method stains the parasite and nothing else. The non-elective method is as follows:—A concentrated watery solution of thionin (Mühlheim) is made, a few drops of this are put upon the coverglass preparation, which is then heated till the steam rises. After cooling it is washed in water, dried in the air, and placed for 10 to 20 seconds in Lugol's solution. In such preparations the parasite appears dark blue-black, the leucocytes light blue, while the red blood corpuscles are unstained. The basic granules of the leucocytes are also dark blue. An important point about the staining solution is that it must be alkaline.

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The elective staining method is as follows:—A few drops of the thionin solution are again poured on the coverglass, which is heated till steam rises, cooled, washed in running water, dried in air, and immediately placed, film downwards, in a watchglass filled with lithium carmine solution. This is again heated till steam is evolved, cooled, the film is washed in running water, dried in the air, and mounted in balsam. By this method the red blood corpuscles are unstained; the nuclei of the white corpuscles are pale red; nucleated reds, dark red. The eosinophile granules are stained while the basophile are uncoloured. The parasite is again a dark blue-black.

As control investigations, the author directed his attention to the granules of the leucocytes, especially to those of the Mastzellen of lower and higher vertebrates. Those in the mesentery of the amphibians, first described by Lovell Gulland, were most convenient on account of their size. These granules, both in the leucocytes and lying free, were stained by the author's method, but never showed any tendency to assume forms like the parasite. They lost their blue colour entirely when warmed in the lithium carmine solution. The mastzellen granules of mammals showed a similar result.

Two cases of malaria, a quartan and a tertian, examined by the thionin lithium carmine method, showed that the malaria parasite stains in a similar way, but less darkly.

Other control cases, leucocytosis of various forms, acute yellow atrophy and various kinds of anæmia, gave entirely negative results.

The author then proceeds to discuss the appearance of the parasite in cases of myelæmia. Eight additional cases were investigated to those already published. In all of these the parasite was present. Two forms can be distinguished, a round and a sickle form.

The round form the author considers to be the normal parasite. In previous publications he described it as the amœboid form. But, on consideration of the fact that movement of the parasite has not yet been demonstrated, he has dropped the name. A specially characteristic point about the round form is the presence of a clear area in its interior. This can be seen even in the smallest forms. Occasionally a nucleus-like body can be made out in this clear zone. The fact that this nucleus is not constant, the author considers to be due to the imperfection of the staining method, not to the absence of the nucleus. The size and shape of this inner zone varies considerably. Sometimes it lies in the centre of the parasite, sometimes it is eccentric, and occasionally there are two or more in the same organism. The parasite is frequently seen in the

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interior of leucocytes, more often it appears to be simply attached; occasionally it may be seen lying free in the blood plasma. Other small clear spots in the parasite, which are probably quite distinct from those previously mentioned, the author considers to be spores. They possess a dark rim and a clear interior. Bodies of this nature can be seen lying separate, and pass by degrees into the mature form. The author considers this to represent one cycle of development.

The sickle or half-moon form of the parasite occurs with varying frequency. In one case it was entirely absent. In this form also occur clear inner zones. Many of these forms possess one or two flagellæ, which are situated at the extremities. These flagellæ are more evident in the smaller forms. From the occurrence of these flagellæ, and from the general appearance of the spindle forms, the author considers them to be capable of movement. The fact that these forms are more frequently to be found free in the blood coincides with this idea. The sickle and half-moon forms probably represent a definite stage in the development of the parasite. In support of this, these forms are to be found in most cases, and even when not found at one stage of the disease they may be found later. Further, many specimens show the passage of the sickle into the round form. This change can occur in extra as well as in intracellular forms.

The round form of the parasite reproduces itself most probably by sporulation; the smallest round merozoites grow into large round schizoites (plasmodia), which again multiply by sporulation. These spores appear in the peripheral blood only occasionally, probably remaining in the blood-forming organs. In this cycle of development the typical sickle and half-moon forms play no part. They probably belong to another cycle which, from analogy with the malaria parasite, is probably sexual. This cycle is probably completed outside the body, possibly in another host.

The author's conclusions are:—

1. The hæmamœba leukæmia magna is a blood parasite belonging to the hæmosporidia, which only occurs in the so-called myelæmic form of leucocythemia in the blood of man, and stands in causal relation to that disease.

2. The organism is an obligative leucocyte parasite; it can, however, in the different developmental forms occur extracellular, free in the blood plasma.

3. As a rule it occurs in the form of a small round body, easily damaged and destroyed. The smallest examples show plainly a clear inner zone. This inner zone in the large forms is mostly eccentric and occasionally contains a nucleus-like body.

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4. The round forms multiply by sporulation. Small ring forms result, which may be seen in groups in the blood. These enter the leucocytes. Usually only one is seen, but two, three, or even four may occur in one leucocyte.

5. Sickle and half-moon forms of the parasite occur. These are often extracellular, and are not equally numerous in all cases. They show one to three nucleated bodies and one or two polar cilia, which are only exceptionally met with in the round forms. They probably represent a sexual generation not completed in the human body.

6. The leucocytes infected by the parasite belong to the large and small mononucleated varieties as a rule. The small young forms usually occur in the basophile leucocytes and myelocytes. The larger forms may occur in the polynuclear leucocytes, seldom in the eosinophiles. The parasite is most often simply attached to the leucocyte. The leucocyte itself is ultimately destroyed.

The paper is accompanied by a long series of most excellent and convincing photomicrographs.

The Action of the Tubercle Bacillus on the Tissues.—An interesting paper entitled "Beitrag zur Lehre von der primären Einwirkung des Tuberkelbacillus" has recently appeared from Weigert's laboratory. The author (Wechsberg) first proceeds to discuss the very abundant literature on the histogenesis of the tubercle. Beginning with the name of Virchow, this literature contains the names of many celebrated pathologists—Ziegler, Baumgarten, Metschnikoff, etc. But it will suffice to quote the author's summing up of the present state of that much-discussed question.

"We find," he says, "two parties whose views are more or less sharply opposed to each other. On the one side Baumgarten and his followers, on the other side Metschnikoff and his pupils; a few take a middle course. Both parties accept the view that the tubercle bacillus or its toxin is the original cause of the production of the so-called epithelioid cells of the tubercle out of the fixed tissue cells or 'wandercells,' or from both. The point where the two parties differ may be stated thus. According to Metschnikoff the first step in the process is the wandering of polymorphonuclear leucocytes from the blood, which attack the bacilli but possesses no permanent power of protection for the organism. The more important struggle against the tubercle bacillus is carried on by the so-called macrophages, *i.e.* the large, usually single-nucleated phagocytes. These, according to Borrel's idea, which is not quite the same as Metschnikoff's, represent lymphocytes which wander from the blood and change into large nucleated epithelioid cells. Baumgarten, on

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the contrary, denies the participation of the polymorphonuclear leucocytes entirely. His point is that the epithelioid cells are developed from the fixed tissue elements, be it connective tissue or parenchyma." This opinion he founded upon the fact that mitotic figures occurred in large numbers in the fixed tissue cells of all the organs which he investigated experimentally. This cell-division he ascribed to the direct irritation of the tubercle bacillus or its toxin.

Now, Weigert's theory as to the cause of cell-multiplication is directly opposed to this. It may be stated shortly thus. All tissues consist of cells and intercellular substance. Under normal conditions these are in a condition of balance or equilibrium. Multiplication of the cells is prevented by the interstitial substance. Increase of the interstitial substance cannot take place so long as the cells remain intact. Should, however, some agent destroy either the one or the other, then the hindrance to growth is removed and multiplication takes place. For example, in the case of cirrhosis of the liver, according to Weigert's theory, the primary condition is not an irritation and increase of the connective tissue, but a degeneration of the liver cells allowing the interparenchymatous tissues to multiply.

The problem which Wechsberg set himself was to find out if, in the very earliest hours of its action upon the tissues, the tubercle bacillus destroyed the fixed tissue cells or intercellular substance. Such a problem would be exceedingly difficult to solve with ordinary staining methods, but the Weigert elastic tissue stain affords one an opportunity of studying changes in one particular tissue. The lung contains more elastic tissue than any other organ, and it was to the lung, therefore, that Wechsberg directed his attention.

He carried out his experiments by injecting virulent cultures of tubercle bacilli, made into an emulsion with Kochsalzlösung, into the jugular veins of rabbits. He afterwards killed the animals at stated intervals and examined the lungs, directing his attention particularly to the elastic tissue. His staining method was (1) staining in carbol-fuchsin ; (2) Weigert's elastic tissue method ; (3) lithium carmine as a nuclear stain. Thus the bacilli were stained red, the elastic tissue blue, and the nuclea pink.

The lungs of a rabbit killed six hours after injection showed numerous blood vessels in which lay groups of bacilli surrounded by leucocytes, and shed endothelial cells. Even at this early period the elastic fibres of the vessel wall were distinctly thinned, and in many places there was a gap in their continuity through which streamed the leucocytes.

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In the lungs of rabbits killed at later periods the destruction of the elastic fibres was more advanced until nothing but a few fibrils could be made out in the vessel wall.

Along with this destruction of intercellular substance occurred an accumulation of cells, probably of connective tissue origin, to form the epitheloid and giant cells. The author is not very explicit as to the exact time of the appearance of mitotic figures, but he states that they could be demonstrated in large numbers after three days, in tissues fixed in Flemming's solution.

We have here then an interesting addition to our knowledge of the early action of the tubercle bacillus. Some have gone so far as to say that there is no difference between the changes produced by a living bacillus, a dead bacillus and a foreign body such as a hair, in the early stages. That it is only later when caseation occurs that we have a change characteristic of tubercle. Wechsberg, however, has demonstrated that the tubercle bacillus commences its work of destruction practically at the moment it enters the organism. His results also support Weigert's theory explaining the occurrence of mitotic figures.

FRANKFURT-a/M, *November* 1901.

Meetings of Societies

The Edinburgh Medico-Chirurgical Society

THE second meeting of the eighty-first session was held on Wednesday, 4th December—Professor Fraser, the President, in the chair.

Dr Wm. Elder and Mr Miles showed a patient after removal of tumour from the left pre-frontal lobe of the brain. The case was that of a man, aged 47, who enjoyed good health till May last, when he commenced to have pain in the back of his head, persistent frontal headache, and attacks of vomiting. He gave up work in September; he now refused food, became emotional, and lost all sense of decency. When admitted to Leith Hospital on October 12th he could only be roused with difficulty; his main symptoms were mental, inability to sustain attention, and want of judgment; the deep reflexes were normal, there was no aphasia. There was a small swelling over the left frontal region very suggestive of a gumma, though history of syphilis was not admitted. On October 15th he became comatose, and a tumour of the left pre-frontal lobe was diagnosed. On trephining, a tumour the size and consistence of the prostate was found and

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removed; on histological examination it proved to be a gumma. He became quite sensible immediately after recovery from the effects of the chloroform. The tumour was exhibited at the meeting.

Drs Lovell Gulland and Logan Turner showed a patient after successful operative treatment for laryngeal tuberculosis. On the right side there had been a large mass of infiltration, which was removed at six sittings with large forceps, lactic acid being rubbed in after each removal.

Mr Shaw M'Laren showed a patient after recovery from compound depressed fracture of skull and lepto-meningitis. Two years ago patient had been thrown against a wall, and this was followed by extreme mental excitement. He had never lost consciousness. He was trephined and the wound was sterilized as thoroughly as possible. On the fourth day he became obstreperous and delirious, there was twitching, and motor and sensory paralysis of opposite side, and the temperature rose to 101 degrees, suggesting septicæmic meningitis. The stitches were removed, the wound washed with 1 in 20 carbolic lotion, iodoform dusted on, and a wet antiseptic dressing applied. He finally recovered.

Dr Francis Boyd showed a specimen of bowel from a case of acute dysentery.

Dr Burn Murdoch showed large gall-stones which produced practically no symptoms.

Mr Alexis Thomson showed a large gall-stone which caused acute intestinal obstruction and was removed by enterotomy.

Dr Harvey Littlejohn showed (1) surgical instruments used by natives of Northern Nigeria; (2) kidney and ureter showing effect of accidental ligature of ureter for removal of intra-ligamentous ovarian cyst; (3) injuries received in a fall from a window 25 feet high.

Mr Chas. W. Cathcart showed (1) toy whistle removed from the trachea of a boy aged nine, after being six weeks in the air passages; (2) portions of needle and thread, also Röntgen Ray photograph of same, removed from knee of a girl aged seven.

Mr Caird showed (1) carcinoma of ascending colon, from a case of primary resection and suture; (2) lung preparations (method of Buchhold).

Dr Dawson Turner showed apparatus for measuring the electrical resistance of the blood. He said the chief difficulty in measuring the electrical resistance of the blood was due to the fact that only excessively small quantities of blood can be obtained during life without inconvenience. After trying very many methods he at last adopted the following:—5 c.mm. of freshly drawn blood are placed between two spongy, cup-shaped,

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platinum electrodes held at a distance of 1 mm. The resistance is then measured by Kohlraurch's method. The average resistance of healthy blood measured under these conditions is 550 ohms; in pernicious anæmia this may be reduced to one-half. Dr Turner also brought before the Society the results of his observations on the Röntgen Rays in syphilis. He held that the bones in syphilis are practically transparent, and that this is a useful means of diagnosis between malignant and syphilitic disease of the bones.

Dr Lawson read a paper on "Some clinical observations upon the Temperature of Phthisis based upon experience of 100 consecutive cases treated by Open-Air Methods," with lantern illustrations. It appears in the current number of *The Scottish Medical and Surgical Journal.*

In the course of the discussion which followed, Dr James said he regretted no mention had been made of complications and their effects on temperature. In regard to the circumstance that a gain in weight is sometimes coincident with progress towards a fatal termination, Dr James called attention to the huge liver often found in emaciated phthisical subjects in the *post-mortem* room. He thought that an explanation of inverse temperatures should often be looked for in the antecedents of the patient, *e.g.* they were very often found in those who had worked during the night and slept during the day, as in the case of night-policemen and night-nurses.

Dr Gulland remarked that the observations on the effects of exercise were new and most valuable; he thought that taking the temperature in the axilla certainly led one very far astray. He advocated caution in accepting every statement as to gain in weight simultaneous with unfavourable progress, as the so-called gain might be due to subcutaneous œdema. He thought that perhaps too much had been made of temperature, since, after all, it was only one of many factors.

Dr Taylor criticised adversely the recommendation to take the temperature in the rectum; he thought it fallacious to take it in the mouth, and considered that the most accurate results were obtained by taking it in the axilla.

Mr Wallace read a paper on "Suprapubic Prostatectomy." He said a patient may suffer from all the symptoms usually associated with hypertrophy of the prostate, without the prostate being at all enlarged, and that this fact had led Poncet to divide cases of prostatism into two groups: (1) those due to enlargement of the prostate mechanically interfering with the outflow of urine; and (2) those due to septic conditions, without enlargement of the prostate, but presenting symptoms similar to those in cases with enlarged prostate. This difference in

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cause in prostatic cases leads to a difficulty in suitable treatment. A consideration of the symptoms alone cannot definitely determine whether the prostate is enlarged or not. Enlargement of the prostate detected on rectal examination does not necessarily imply any mechanical obstruction to the urethral orifice. An apparently small prostate per rectum does not exclude the presence of an intravesical enlargement. The view of Guyon that "the radical treatment of enlarged prostate does not exist, nor can it exist," still holds in the sense that no one method of treatment can be termed radical when applied to all cases.

The etiology of the condition commonly termed hypertrophy of the prostate, has not as yet been satisfactorily determined. The enlargement is known to occur most frequently in persons past middle life, but the statement made by Sir Henry Thompson that it does not occur in persons under 54 is now considered erroneous. The view of Guyon, upheld by the French school, that enlargement is secondary to arterio-sclerosis, is untenable. Whatever the origin, the enlargement is frequently due to the formation of masses of glandular tissue, which form fibro-adenomatous tumours, or fibro-myomatous tumours similar to those of the uterus.

Three varieties of enlargement may be recognised :—(1) the vascular, where it consists of almost erectile tissue; (2) the fibrotic, a general enlargement without tumour formation; (3) the fibro-adenomatous and fibro-myomatous, in which actual tumours are present. Four methods of treatment are at present in vogue :—

(1) Catheterisation.
(2) Cystotomy: (*a*) perineal; (*b*) suprapubic.
(3) Castration or vasectomy.
(4) Prostatectomy: (*a*) perineal; (*b*) suprapubic.

Any one of these may be used in an individual case, but Mr Wallace thinks the catheter should be used if possible only in those cases in which the condition has not reached atony of the bladder, and castration or vasectomy only in those where catheterisation has become more difficult or associated with cystitis or bleeding following the use of the catheter. Both castration and vasectomy have the great disadvantage that accurate diagnosis is not possible, and if either fail to relieve the symptoms, time has been lost, and the patient after all has to submit to cystotomy.

Mr Wallace thinks that perineal cystotomy can very seldom, if ever, be a better or safer procedure than suprapubic cystotomy, and said it was a procedure which he would wholly discard. Suprapubic cystotomy was particularly advantageous, as it

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enabled one to see precisely what the condition in the bladder was, and how to deal with it best. He advocated its adoption in all cases of prostatic trouble which have passed the early stage, that is to say, where there are complications, and more particularly when accompanied by atony of the bladder wall. The bladder could be drained by Cathcart's modification of the Sprengel pump, with the knowledge that the bladder wall would gradually contract, and in many cases eventually recover its expulsive power.

The late Mr McGill, of Leeds, initiated a new method of treatment, which has been modified from time to time, but the essential factor remains as enunciated originally by McGill. With regard to the method of its performance, much depends on the condition of the prostate. A middle lobe is readily removed; large adenomatous growths can be enucleated, and these are the favourable cases to treat by this operation. Mr Wallace does not believe all prostates are suitable for even partial removal, and he feels certain that complete removal of the prostate, without opening into the urethra, is an anatomical impossibility. This operation, which seems so rational, has not been adopted so universally as might have been expected. Perhaps the following three factors have influenced surgeons against it: (1) the supposed danger of suprapubic operations; (2) the relief given in prostatics by "Catheter life"; (3) the introduction a few years later of an apparently rational and safe operation—castration.

Mr Wallace's operations, 40 in number, were performed for very different conditions, such as tumours, calculi, tubercle, enlarged prostate. In the majority the urine was septic. There were five deaths, equal to 12·5 per cent. So far as these cases were concerned, Mr Wallace felt justified in saying suprapubic cystotomy *per se* was not a dangerous operation. It was easy and rapid, with reasonable care the peritoneal cavity was safe, and prevesical cellulitis almost chimerical.

Projecting middle lobes can be readily removed, whatever their constitution may be. When fibro-adenomatous they can be almost completely enucleated; when more fibrous, they require division at their base. Fibro-adenomatous or fibro-myomatous masses in the lateral lobes lend themselves readily to enucleation, but if adherent at any point such attachments can be divided with curved scissors, bleeding, as a rule, being slight. The larger the masses the easier the operation. Septic urine, though it adds to the risk, does not contra-indicate removal of the mass at the time of opening the bladder; the operation need not, therefore, be done in two stages. To operate even a day or two after the primary cystotomy adds to the difficulties,

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for the bladder by that time has contracted, and the relations of the parts are considerably masked, and there is less room for manipulation.

Bleeding was not troublesome, and was always readily arrested by washing out the bladder with hot water. The Sprengel pump should not be used for three or four hours after operation, as it may keep up bleeding.

In none of Mr Wallace's cases did permanent fistula result. He removed the tube at a varying period. If the bladder be contractile the drainage may be stopped at any time from a day or two to ten days; but if there be atony of the bladder, drainage should be kept up for three or four weeks, so that the bladder may regain tone. The fixation of the anterior wall of the bladder to the anterior abdominal wall, which results after such drainage, is a further reason in favour of suprapubic cystotomy.

Mr Caird agreed with Mr Wallace that suprapubic cystotomy was the operation *par excellence* for getting at the prostate.

Mr Cathcart did not think we had yet reached that position.

Mr Cotterill thought that the advantages of attacking the prostate by the suprapubic method were very great; he had never lost a case operated on suprapubically. He agreed with Mr Cathcart that the suprapubic is not the best method in every case, and that sometimes the perineal was better.

Mr A. G. Miller said he was afraid the younger surgeons considered that treatment meant operation in every case, and that there was also a tendency to think of the prostate only or mostly. There might be considerable enlargement and no trouble; the real trouble to be treated was not so much the large prostate as the residual urine. He did not think it advisable to start catheter life in all early cases, because sooner or later it meant death. The education of the bladder to better habits was the best method of treatment. He emphasised the advantages of the prolonged use of ergot in a big, soft, vascular, bleeding prostate.

Dr Chalmers Watson showed a series of photographs illustrating the results obtained from an experimental research on the comparative pathology of gout.

The investigation consisted in feeding poultry (eight individuals) with a diet strictly limited to red meat and water for a period of fifteen months or less, and noting the clinical and pathological results. A study of the results emphasised the importance of more attention being paid to the individual factor in disease. At the end of nine months, at which period the experiments were partially concluded, the subjects were divisible into three groups: (*a*) Those (two in number) which had suc-

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cumbed, or of necessity been killed, within four months of the commencement of the special feeding. The symptoms observed were of an acute nature—ataxia, paraplegia, gradually-developing unconsciousness, and death within four days of the onset of symptoms. (*b*) Those (five in number) which had exhibited no nervous symptoms of a similar profound nature. (*c*) One hen which was at this time in fair health, but which had experienced two severe attacks of a nature similar to those recorded in Group (*a*), without, however, involvement of the higher neurons. The fowl recovered slowly from each of these attacks, and was killed three months later on the occurrence of a third more severe attack. These results had previously been referred to, and their bearing on disease in the human subject pointed out in the author's paper "On the Pathogenesis of Tabes and Allied Conditions in the Cord." Dr Chalmers Watson also exhibited a photograph of the feet of a hen supposed to be the subject of true gout. The bilateral enlargement of the feet was shown not to be of a gouty nature, but to be the result of a local infection.

THE third meeting of the session, a special clinical one, was held on the afternoon of Wednesday, 18th December, Dr James Andrew in the chair.

Mr C. W. Cathcart showed a patient after drainage of both pleural cavities for double empyema. Pneumococci alone were found in the pus, 1½ pints of which were removed from each pleural cavity. He had been very persevering in the use of the inflator, but Mr Cathcart was doubtful if negative pressure was really produced by its use.

Dr Allan Jamieson exhibited a man, aged 28, apparently cured of lupus vulgaris by means of the Finsen light treatment. When a child he had received on the chin a wound on which lupus developed. The patch covered an area measuring two inches by one inch, and for five weeks in 1900 was treated by the Finsen light in London by Dr Sequeira with considerable benefit. Having recurred, however, it was treated in Edinburgh by the Finsen method by twenty-five exposures of 1¼ hours each. The reaction varied with the light. The usual interval during which the treatment had to be stopped was two to three days, the longest one week. The whole surface is now a smooth white scar.

Dr Allan Jamieson also showed a case of rodent ulcer treated by X-rays. The patient, a strong, healthy woman, aged 41, had on the left side of the forehead two patches of rodent ulcer, which had commenced three years ago as a small papule. They were exposed to the X-rays twelve times at a

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distance of two inches. The surfaces were then scraped and boric ointment applied. The exposures to X-rays were then continued, and ultimately the ulcers healed completely.

Mr Miles showed a patient after posterior gastro-enterostomy performed for severe hæmatemesis. The patient, a woman aged 42, was suddenly seized with severe hæmatemesis in September. Four years previously she had been treated for dyspepsia, and the stomach, which was dilated, had been frequently washed out. She never before vomited blood, nor had she shown any of the ordinary symptoms of gastric ulcer. After this attack she remained in good health till the vomiting of blood began in September. The usual methods of treatment were unsuccessful in arresting the hæmorrhage, which went on more or less continuously for forty-eight hours. She was then taken to hospital, on admission to which she was found to be blanched, cold, and almost pulseless, and exhibiting all the symptoms of air-hunger. Under chloroform the abdomen was opened in the middle line above the umbilicus, and on examining the stomach a densely indurated ulcer about the size of a five-shilling piece was found close to the pylorus. It extended to the lesser curvature, and fully two-thirds of the way to the greater curvature. It was therefore impossible to invaginate it without great risk of occluding the pyloric orifice, and the condition of the patient did not justify an attempt to excise the ulcer. It was therefore decided to perform a posterior gastro-enterostomy. After opening the stomach its interior was explored with the finger, and the site and size of the ulcer confirmed. No definite bleeding point was recognised. The communication between the stomach and intestine was then completed with silk stitches. Before closing the abdomen about two pints of saline fluid were introduced into the peritoneal cavity. During the first twenty-four hours after operation patient was given rectal injections of saline fluid (eight ounces) every four hours, and frequent nutrient enemata. These were all retained. The foot of the bed was raised. Although she continued to vomit bile-stained mucus at intervals there was no further loss of blood. Flatus was passed in the evening. On the following day patient was better, but still sick occasionally. This became less frequent after the foot of the bed was lowered. As it was possible that the sickness might be due to regurgitation from the small intestine into the stomach, the head of the bed was raised. After this was done the vomiting ceased. The bowels moved slightly about midnight. Next day beef-tea and peptonized milk were given by the mouth. From this time onwards satisfactory progress was made. The wound was dressed on the 9th day and the stitches removed. Primary

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union took place. She was up on the 21st day and left the hospital on the 29th day. Since going home on October 7, she has remained well and her health has greatly improved.

Mr Miles next showed a patient after operation for intestinal obstruction due to tubercular peritonitis, with subsequent development of tuberculous pleurisy, which was treated by drainage. The patient, a boy aged 16, was admitted to Leith Hospital on August 18, 1898, suffering from intestinal obstruction. He had enjoyed good health till three weeks before admission, though he had never been robust. Three weeks before admission, after returning from a picnic, he felt sick and vomited. He had some slight pains all over the abdomen. For a week the vomiting continued at frequent intervals, and he was unable to attend to his work. The movements of the bowels were unsatisfactory. The next week he resumed his work and had no further trouble till three days before admission. On that day, August 16th, he was suddenly seized with pain in the abdomen. The pain was general and constant but not severe. He vomited everything he swallowed. The bowels did not move and no flatus was passed. As these symptoms persisted for three days, and became aggravated, he was sent to hospital. On admission the temperature was 97°, the pulse 100, of low tension but of good volume. The abdominal walls were retracted and did not move with respiration. Peristalsis was visible in the middle of the abdomen and in both flanks, and suggested movements of both large and small intestine. No definite swelling could be palpated. In the right iliac region and in the line of the descending colon masked gurgling could be elicited. The abdomen was uniformly tender all over. The rectum was empty and ballooned. Several enemata were administered without result. The abdomen was opened in the middle line below the umbilicus: the small intestine exposed was distended, deeply congested and thickly studded with miliary tubercles. The parietal peritoneum was also covered with tubercle nodules varying in size from a pin's head to a horse bean. On exploring the abdomen a fibrous band was found constricting the small intestine a little to the right of the umbilicus. The collapsed bowel beyond the constriction was lying at right angles to the distended bowel, and the two loops were united by comparatively recent adhesions for about an inch. After dividing the band and separating the adhesions the intestinal contents instantly passed into the collapsed bowel. The whole of the peritoneum was found to be covered with tuberculous nodules, but no further adhesions could be detected. There was very little fluid in the peritoneal cavity. A Keith's tube was introduced into the pelvis and the abdomen closed.

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The stitches were removed on the 10th day. For the next five weeks the patient continued to improve. A month after the operation he was allowed up. Five weeks after the operation the temperature began to rise, and patient complained of pain in the epigastrium and in the right side. Nothing abnormal was found on examining the chest. The temperature varied between 99 degrees and 102 degrees, the pulse from 110 to 124, and the respiration from 22 to 28, for some days, and the pain in the right side of the chest became more severe. There was a sharp catching pain on inspiration, and a short, dry cough. A puncture was made into the right pleura and some clear fluid withdrawn. During the next few days the effusion increased. Eighteen days after the temperature began to rise a portion of the eighth rib was excised in the posterior axillary line. Numerous recent adhesions were found, and a quantity of clear fluid escaped. The wound was sutured without drainage, and it healed by first intention. Patient slowly recovered, and for three years has enjoyed excellent health. The interest of the case lay in the fact that both the tubercular peritonitis and tubercular pleuritis were successfully treated by drainage.

Mr Miles then showed a patient after excision of the rectum by Kraské's method. The patient, a labourer aged 52, was admitted to Leith Hospital with the history that during the previous six months he had had increasing difficulty with his bowels. He first noticed that he had to strain unduly at stool, and that the motions were narrow and flattened, "like a piece of tape." They were also streaked with blood. A month later he developed a sensation as if there was a "lump" permanently in the rectum. He had a constant desire to empty the bowel, and had to make the attempt every hour or oftener, but in spite of severe straining he only succeeded in passing a little blood and mucus. Some time later he developed griping pains across the lower part of the abdomen, and these pains became more frequent and more severe. Three months after the onset of his illness he began to have increased frequency of micturition, and required to strain to empty the bladder. He lost nearly two stones in weight. No history of syphilis could be obtained, and he had always enjoyed good health. On rectal examination a tight stricture was found within an inch and a half of the anus. It admitted only the tip of the finger. The edges were hard and ulcerated. The rectum was movable, except anteriorly, where it appeared to be attached to the prostate gland.

On 12th September 1901, a vertical incision was made from the middle of the sacrum to the anus, and the coccyx and lower part of the sacrum were removed. The rectum was exposed and isolated, clamped above the tumour, and cut across. The

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rectum was dissected out down to the anus. It was found to be adherent to the prostate, but the disease did not apparently infiltrate that gland. The cut end of the bowel was stitched to the upper angle of the wound, and the rest of the wound was loosely sutured. The patient's recovery was only interrupted by an attack of retention of urine on the 40th day, which could not be accounted for, but it did not recur. He has not complete control of the bowels, but is aware when they are about to move, and so long as the motions are solid he can keep himself comfortable and clean.

Mr W. G. Sym showed a patient on whom double excision of lacrymal sac was performed, followed by extraction of cataract in one eye. Mr Sym remarked that, given good drainage of the conjunctiva, there was no fear of suppuration, and that if the sac were removed, the lens might be extracted without any risk. The patient had not the slightest annoyance from the absence of the sacs.

Mr Stiles showed a boy after operation for recurrent tubercle and stricture, following amputation of penis for tuberculous disease of the glans. The boy had been circumcised two years before; all sorts of ointments had been used without effect. In August the disease was removed, but recurred in the scar, so the only thing to do was to amputate.

Mr Stiles showed four children showing the results of treatment of congenital wry-neck by the open operation. He made a transverse incision one inch above the clavicle, dividing the clavicular fibres of the sterno-mastoid and the fascia behind it. Mr Stiles said the carotid sheath must be divided, and the internal jugular vein exposed. No subsequent treatment was necessary. The obliquity and atrophy of the face on the affected side was seen in all the children. Mr Stiles thinks this open method more satisfactory than the sub-cutaneous, and that this deformity is really a congenital and not an acquired one. He pointed out that in these cases the sterno-mastoid was not to be seen, and that the other muscles of the neck take its place.

Mr Alexis Thomson showed a female patient, aged 52, the pyloric portion of whose stomach had been removed for cancer three and a half years ago. This was his longest result so far. The method used was Kocher's; a $\frac{7}{8}$-inch Murphy's button was used. The tumour was epitheliomatous, and this variety gave a more favourable prognosis as regards recurrence than schirrus. He thought this patient might safely look forward to complete immunity.

Mr Caird showed a patient after operation for high shoulder, due to osseous plate developed between the scapula and

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vertebral spines. It moved with the scapula, and interfered with the action of the arm. Only three other cases were on record. It arises from the supra-scapular epiphysis or in the laminæ of the cervical vertebræ.

Mr Miles showed specimen of—(1) rectum excised for malignant disease by Kraské's operation; (2) specimens of preputial calculi; (3) specimens illustrating fracture-dislocation of the spine.

Mr Caird showed—(1) specimens and photographs from case operated upon for high shoulder; (2) carcinoma of transverse colon, from a case of resection and primary suture.

Edinburgh Obstetrical Society

THE second meeting of this Society was held on the 11th December—Dr James Ritchie, President, in the chair. As is usual, a large number of specimens were exhibited by Drs Berry Hart, Milne Murray, Lamont Lackie, and Haultain. An interesting one was that of an ovarian tumour with a twisted pedicle in which there had been no symptoms although the cystoma was universally adherent in front and the pedicle was so attenuated that it resembled a thread. Another comprised the entire gestation sac from a case of placenta prævia at the seventh month of pregnancy.

Dr Milne Murray described a most interesting "Case of spontaneous rupture of an apparently normal uterus at the commencement of labour." He stated that such an occurrence was a rare one. In certain instances we could recognise the conditions which were likely to predispose to rupture, in others we could detect the signs of threatened rupture, and we could in a number of cases exercise a salutary prophylaxis with the best results. Further, the resources of modern surgery encourage interference even in apparently desperate circumstances.

It might be safely said that the occurrence of a case of rupture of the uterus in the hands of an obstetrician was generally a reproach to him and a slight on his art. In most cases the conditions which predispose to it were so obvious, and the signs which precede it were so easily recognised, that the accident should not occur. On the other hand, however, cases arise where uterine rupture occurs under apparently normal conditions and develops without premonitory signs. In such cases treatment after the fact is our only resort. The immediate causes of uterine rupture may be divided into (*a*) traumatic and (*b*) spontaneous. Under the first comes direct mechanical violence, *e.g.* forcible introduction of hand into uterus, unskilful version,

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improper use of forceps. Such causes of rupture should never occur. External traumatism, as falls or blows on the abdomen late in pregnancy, come also under this head. In cases of spontaneous rupture we assume that the immediate determining cause is the contraction of the uterus. The predisposing conditions, those which render the uterus liable to rupture, are various, but the great majority are associated with some condition arising out of an abnormality of either of two of the factors of labour—the passage or the passenger. In the former case, we may meet with a rigid or a contracted pelvis. In the latter, the passenger, a hydrocephalic head, or a malpresentation. Given any condition which interferes with or delays the dilatation of the os, the lower uterine segment becomes thinned out, while the muscular tissue of the upper segment gathers itself together into a sort of cap on the upper pole of the uterine mass. The strain on the thinned out lower segment increases until it gives way, in most cases not far from the junction of the two segments. A tear so produced will tend to run across the long axis of the uterus, though the general direction of the tear may be altered by the splitting produced by the escape of the uterine contents. Thus the developed tear may run obliquely or directly upwards. If, however, the thinning of the lower segment be associated with a contracted pelvis, the position of the rupture may be determined by the grinding of the thinned portion between the fœtal head and some ridge in the bony pelvis; or the point of rupture may result from an excessive thinning out of the uterine wall over a prominent point in a malpresentation.

But spontaneous rupture may occur without any such process as that described by Bandl. There may be no abnormal obstruction to the escape of the contents, the labour may only have begun, and the tear may have no special relation to the lower segment. Three sets of cases may be found in this group:—(1) Those due to interstitial pregnancy. In most instances this condition causes rupture at the fifth or sixth month, but a certain number may continue to full time, and the rupture may follow the first labour pain. (2) Spontaneous rupture may occur in certain abnormal conditions of the uterus, such as the bicornuous or myomatous uterus, or where the patient has previously undergone Cæsarean section. Krukenberg has collected thirteen cases of women who had previously undergone the Cæsarean operation, in each of whom the uterus ruptured in a subsequent pregnancy. (3) There are a very few cases recorded where the uterus has ruptured at the beginning of labour in a uterus of normal conformation and in which there were no gross complications. It was to this group that Dr Milne Murray's case belonged and which he described.

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The woman was aged 27 and was a v-para. The pain began at 11.30 P.M., 21st July, at a spot halfway between the umbilicus and the left anterior superior iliac spine. At 10.30 A.M. on the following day Dr Murray was called to see her, and found the patient in a state of profound collapse. The abdomen presented a curious barrel-shaped appearance, it was extremely tense and palpation caused much suffering. Chloroform was given, and then the fœtal parts could be felt with great distinctness. There was no doubt but that the fœtus was either in the abdomen or in a very thin sac. By the finger in the vagina, the cervix was open and the finger beyond the os internum passed into an empty cavity, and on the left side a rent could be felt through which the finger entered the abdominal cavity. Through this the edge of the placenta was felt, and the head of the fœtus could be made out a little beyond. It was clearly a case in which the whole uterine contents had escaped into the abdomen. As operation gave the patient her only chance, the following procedure was carried out. On opening the abdomen an enormous quantity of fluid escaped, consisting of blood and liquor amnii. The fœtus and placenta (both free) were rapidly removed, and the uterus, now firmly contracted, was brought out of the incision. The tear in the uterus was found to extend from a point an inch behind the left Fallopian tube downwards and forwards along the border of the uterus to the vaginal roof, and the lower end involved the left upper region of the bladder. There was an alarming amount of hæmorrhage, both from the tear in the uterus and from the proximal end of the torn uterine artery. The ovarian arteries were tied on both sides, the bladder was dissected off the anterior wall, and the right uterine artery ligatured. The uterus was then amputated through the cervix and the rent in the bladder closed by several fine catgut stitches. The stump of the cervix was not stitched up, so as to serve as a drain. The operation had lasted more than an hour, and, considering everything, the patient had stood the operation very well; but, to shorten the further steps, no attempt was made at an abdominal toilette, though blood, liquor amnii, and vernix caseosa had been present. Before removing the patient from the table, a copious enema of hot saline solution, containing an ounce of brandy, was given. A hypodermic injection of $\frac{1}{60}$ grain of strychnine was also administered. The patient made a continuous progress until the twelfth day, when her convalescence was interrupted by the formation of an abscess in the left lateral fornix, which discharged through the cervical canal. The patient was discharged on the 14th September. Dr Murray then compared his case with one described by Professor Simpson in 1866. As to how the

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rupture occurred in the case described, Dr Murray could offer no explanation, the uterus appeared otherwise perfectly normal. It was almost certain, however, that there was some obscure change in the quality of the uterine muscle. In similar difficulties regarding the ligature of torn vessels, Dr Murray said he should rather save time and hæmorrhage by tying the internal iliac. He was quite satisfied, in his own mind, as to the capacity of the peritoneum to deal with aseptic foreign matters, and deprecated making too much of the abdominal toilette. When the matter is septic the conditions are, however, very different, and the resources of our art must be exhausted to prevent its entrance into the cavity, and, if these fail, it must be removed by direct or indirect means.

Dr J. M. Munro Kerr read a paper on "The Separation of the Placenta, with special reference to the information derived regarding its separation in cases of Conservative Cæsarean Section." The communication was long and interesting. Perhaps the most important point brought out was that Dr Kerr had observed that when the uterus contracted there was a separation between the anterior and posterior walls of the uterus of two inches at least. The conclusions he arrived at were that, personally, he was quite satisfied that during the contractions of the uterus a space was formed between the two walls. He could not think that the incision in the muscular wall and free access of air into the uterus, which are of necessity accompaniments of the operation of Cæsarean section, negatived the value of its bearing on the mechanism of the third stage under normal conditions. This might appear a small matter to make so much about, but all who were acquainted with the subject knew that Barbour's theory of the separation and expulsion of the placenta fell to the ground if it could be proved that there was a separation of the walls. Dr Kerr believed that this had been shown, and he had long felt, from clinical observation, that the globular, or apparently globular, form that the uterus assumed during contraction pointed to this. As regarded Dr Berry Hart's contention, he could not express any opinion. He knew that contraction alone in some of the cases he had described brought about a separation. He saw, however, that in the uterus left entirely to contract and "recoil," the latter condition might aid in bringing about separation. Dr Kerr summarised as follows:—

(1) Retraction alone does not bring about separation of the placenta.
(2) During contraction the walls of the uterus become separated.
(3) There are two distinct divisions of the third stage—separation, and expulsion of the placenta.

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(4) The separation occurs by contraction, and possibly also by "recoil."
(5) The separation may occur at the edges.
(6) Blood, as a natural consequence, is effused into these areas of separation.
(7) The placenta bulges inwards during a contraction, and remains so to some extent during relaxation.

This communication gave rise to an extended discussion, and much of it partook of an adverse criticism of Dr Kerr's conclusions.

Glasgow Medico-Chirurgical Society

THE third ordinary meeting took place on November 15, 1901, when the President (Dr W. G. Dun) occupied the chair. The item on the billet, "The treatment of pneumonia," had drawn a large attendance.

The discussion was opened by Dr Geo. Middleton, who first of all touched on the nature of the disease, adduced arguments in support of its claims to be classed among the infective fevers, and adverted to its not infrequent fatal termination. In connection with the latter point, he said that very frequently at the *post-mortem* table, if one asked the pathologist what the cause of death really was, the answer given would be: "I do not know." It was not due to failure of the heart from venous engorgement, but rather to a primary action of the pneumonia poison.

Treatment.—Of all diseases, typhus was perhaps that most similar to pneumonia in general clinical course, and the treatment was the same for both. The only curative treatment could be an antitoxin, and nothing of that nature produced so far was very encouraging. Essentials were (1) fresh air, (2) rest, (3) food. Local applications, as blisters or poultices, might, if wished, be used early—not in the later stages. Alcohol was not needed for young subjects. There was a tendency to give too much early. Strychnine, hypodermically, was invaluable as a stimulant, gr. $\frac{1}{30}$ to gr. $\frac{1}{15}$ every four hours. For sleep, morphine, injected, was excellent early; it should not be used later, as it checked expectoration. Bromides and chloral, paraldehyde and hyoscine might all be tried. For great restlessness and delirium cold applications were often useful. Dr Middleton concluded by saying he had had no experience of venesection.

Dr M'Vail, who followed, referred first of all to the fact that there were various types of the disease. His death-rate for the past two years had been 25·3 per cent., corresponding very

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closely to that given in "Clifford Allbutt's System of Medicine" (25·5 per cent.). He considered pneumonia of the right lung more serious than that affecting the left. The consolidation, in his opinion, disappeared by absorption. As regards treatment, he gave milk as the food, and nothing besides. Alcohol he held to be a food, not a stimulant (following Anstey's teaching). Oxygen he had often found helpful, and opium was a valuable drug. Expectorants, he thought, were no good. He had had no experience of the antitoxins.

Dr M'Call Anderson considered the best treatment to be food and nursing. The patient should not be examined too much. Morphine was useful for pain and sleeplessness. Delirium, due to fever, might be relieved by ice to the head and chest. Quinine, strychnine, and digitalin were all of value.

Dr Lindsay Steven agreed with Dr Middleton in all the essentials of treatment. Alcohol he did not regard as a food. Only 4-5 oz. should be given per diem. Strychnine was very useful hypodermically.

Dr Stockman regarded pneumonia as a specific fever to be treated accordingly. Death resulted from the effect in the heart of a poison which acted much as a strong alkaloidal poison might. In feeding, he thought it a mistake to give milk alone. Chicken-tea, jellies and custards ought to be added. Plenty fresh air and rest were essential. He advocated putting cases on tincture of strophanthus early. Alcohol was only a stimulant, not a food.

THE fourth ordinary meeting of the Society took place on December 6, under the presidency of Dr Dun, when the adjourned discussion on pneumonia was concluded.

Dr R. M. Macpherson recommended that patients should be moved as little as possible. He used poultices much, and as routine treatment ammonium carbonate (gr. v) with tincture of digitalis (♏v) every four hours. He had tried venesection, but had seen no case justifying its use.

Dr R. Barclay Ness said we had to deal here with a disease that would cure itself in eight days if the patient could hold out. Food was best given as milk, beef-tea and soup. Water should be freely drunk. Pyrexia he relieved by tepid sponging. He sounded a warning note regarding opium, which he said was essentially a respiratory poison, needing cautious use in lung disease. Alcohol was in part a food, but mainly a stimulant. Digitalis should be used early. Strychnine was valuable, both as a cardiac tonic and respiratory stimulant.

Dr Christie spoke a good deal on preventive treatment, which he said was as yet in its infancy. Isolation of cases and

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plenty fresh air were alone possible in most cases. The incubation time was short, probably two to four days.

Dr Carmichael said there was no specific cure for pneumonia. He followed the ordinary lines of treatment, but used cold compresses often instead of hot poultices, and had found ammonium chloride a good expectorant. Let the patient have plenty fresh air.

Dr Adams, of Hamilton, said he had had sixteen cases in private in the last three years with one death—a mortality of 6·6 per cent. He thought it far better to try to treat the patient at home. General hygiene was all-important. He strongly advocated the use of the ice-bag. Tincture of digitalis (♏v) with the same amount of nux vomica was a valuable combination. For insomnia he employed paraldehyde or hyoscine (gr. $\frac{1}{75}$).

Dr Cowan spoke on the pathological changes met with in the heart in pneumonia. He had examined eight cases *post-mortem*, and found the cardiac muscle damaged in seven. The essential change was a granular degeneration with loss of the central fibril bundles.

Dr Howie said he had found trional useful for sleeplessness.

Dr Middleton then replied briefly, and the President concluded, referring to three points, viz., the change of opinion in the use of opium, the risk of thrombosis in the right heart, and the employment of venesection, which he thought was probably more suited to robust country folks than to patients in town.

Glasgow Obstetrical and Gynæcological Society

THE second ordinary meeting was held on Wednesday, November 27, the President (Dr Jardine) occupying the chair. There was a good turnout of Fellows. After the exhibition of specimens, the Secretary read a report from Dr John Teacher (Pathologist to the Society) on the placenta and cord from a case of twins with hydramnios. The President then gave a communication on a case of double pyosalpinx causing septicæmia in the puerperium. The patient had been delivered, under quite ordinary circumstances, in the Maternity Hospital. Within a few days of delivery she showed elevation of temperature, the lochia remaining sweet. Intra-uterine irrigation had no effect. Signs of general peritonitis developed, and she died in a few days. The *post-mortem* showed distinct acute peritonitis, the cause of which lay in a double pyosalpinx, one of which, at least, had opened into the abdomen. The ovaries were soft and in a state of acute necrosis. This accidental source

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could not have been foreseen, as the patient complained of no pelvic uneasiness before labour.

In the discussion that followed, Drs W. L. Reid, Sloan, Renton, Monro, Kerr, and Carstairs Douglas took part, and Dr Jardine replied.

The next paper was one on some cases of abdominal operation by Dr J. Crawford Renton. He first detailed five cases of gangrenous ovarian cyst, of which four were operated on, and all recovered. He usually applied pure carbolic acid to the stump of the twisted pedicle. Of late he had given a trial to the celluloid ligatures advocated by Mayo Robson. The only objection to their use was that one did not know when they were absorbed. The second group of cases he described were those where he had done ventrofixation for prolapse of the pelvic organs. Dr Renton said he had got much help from Doyen's self-retaining retractor for the abdominal wound. The instrument was shown. A discussion followed, in which Drs W. L. Reid, Sloan, Monro Kerr, and Balfour Marshall took part. Dr Renton replied.

The third paper on the billet was one by Dr Carstairs Douglas, on Lactosuria in Nursing Women, and the best means for differentiating grape—from milk sugar in urine. He had made 91 observations on 56 cases, and had found sugar present in 85 per cent. Most cases were examined between the third and ninth day of the puerperium. It was not very easy to state positively that milk-sugar was present, but if one found a sugar in the urine of a nursing woman which did not respond to phenylhydrazine, and fermented only slowly with yeast, it was fair to assume it was lactose. Dr Douglas also described lists recommended by Ruizard, Rubner and others.

Glasgow Southern Medical Society

THE third ordinary meeting was held on Thursday, November 28th, when two papers of interest were read, one on Word Blindness, by Dr Hinshelwood, and one on Two cases of Abdominal Section, by Dr E. A. Gibson.

The fourth ordinary meeting was held at the University, on Thursday, December 12th, the President (Dr Stewart) occupying the chair.

Professor Stockman showed a number of specimens of clinical and therapeutical interest, while Professor Claister demonstrated the parasites of malaria and some other preparations.

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Aberdeen Medico-Chirurgical Society

THE first meeting of the session was held on November 7th—Dr George Watt, President, in the chair. The annual presidential address was delivered by Dr Watt, who selected as his subject "The History of the Aberdeen Medico-Chirurgical Society from 1881 to 1901"—the period during which he had been a member. The marked progress which the Society had made during that time in vitality, in membership (26 in 1881, 82 in 1901), and in financial position—these and many other satisfactory features in the life of the Society were dealt with. Short but intensely interesting and racy recollections and notes were given of members who had died, including such names as Professors Francis Ogston, Wm. Pirrie, Dyce Davidson, and Smith Shand, Drs Robert Beveridge, Jackson, Rodger, Maitland Moir, etc. Interesting reference was also made to notable events which had happened during the period named, especially to the Centenary Dinner of the Society on December 15, 1889. Finally, a few remarks were devoted to events which had occurred during Dr Watt's year of tenure of the presidential chair—the commencement of a new century and a new reign, the deaths of the Queen and of President M'Kinley—and congratulations were offered to two members of the Society, Dr Angus Fraser and Professor Finlay, on having received the honorary degree of LL.D. from the Universities of Aberdeen and Yale respectively. The address was listened to by a large number of members and was greatly appreciated.

A meeting was held on Thursday, November 21st, when the following office-bearers were elected for 1901-1902:—

President, Professor D. W. Finlay; *Vice-President*, Dr John Gordon; *Secretary*, Dr John Marnoch; *Recording Secretary*, Dr A. W. Mackintosh; *Treasurer*, Dr William Findlay; *Librarian*, Dr Peter Howie.

Members of Council: Drs G. M. Edmond, Angus Fraser D. W. Geddie, George Watt, A. Westland, W. H. Williamson.

A MEETING was held on Thursday, December 5th—Dr D. W. Finlay, President, in the chair. Mr T. A. Mackintosh was admitted as a resident honorary member; and Dr Edward Oliphant, Bucksburn, as a non-resident member of the Society.

Dr George Rose and Dr A. W. Mackintosh exhibited a case which they believed to belong to the anomalous forms of *disseminated sclerosis*. The patient was a teacher, aged thirty-six. In January 1895 she had a great fright, and her consequent

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condition is described by herself as one of "complete loss of sight, great weakness of the legs, marked tremor of the hands, and loss of memory." When seen about six months later she had great pain in the head, weak gait, with distinct staggering to the left, nystagmus, paralysis of the left external rectus, and optic neuritis, with marked impairment of vision. The diagnosis of cerebellar tumour was made. When seen again, two years later (February 1897), she presented still an unsteady gait, not spastic; the hands were quite free from tremor; there was no distinct paresis of limbs; the knee-jerks were diminished; she had occasionally numbness of the left leg; there was no trace of oculomotor palsy; optic atrophy was present, nystagmus very marked, and speech slow and syllabic; she complained of loss of memory and of frequent headache, general in character, not localised. When seen again in August 1897 she presented much the same condition; the unsteady gait, nystagmus, and syllabic speech being still prominent; no knee-jerks could now be elicited, and there was distinct weakness of the left arm and leg, and almost complete hemianæsthesia of the whole left half of the body. She was not seen again till November 1901, when her general condition was found to be little changed; mentally she was more facile and complacent; she complained still of defective memory and of occasional headache; the gait was still unsteady, but there was almost complete disappearance of the weakness and anæsthesia on the left side of the body; no knee-jerks could be elicited; the arms were still quite free from tremor; marked optic atrophy (post-neuritic), nystagmus and syllabic speech were present; there was relatively little impairment of vision, no central scotoma, no contraction of the fields of vision, no affection of the pupils or ocular movements. Throughout the illness neither vomiting nor giddiness had been prominent.

Various points of interest and difficulties of diagnosis in the case were discussed at some length, the readers of the paper inclining to the view that, whatever the original lesion may have been which gave rise to the symptoms of cerebellar tumour, the course of the case and the present complex of symptoms suggested as the most probable diagnosis one of the many aberrant or atypical forms of disseminated sclerosis.

Dr John Gordon read notes of a *case of primary carcinoma of pancreas, with nodules in the liver.* The patient, a woman aged fifty-six, of a highly neurotic temperament, was admitted into the Aberdeen Royal Infirmary in 1896, complaining chiefly of pain in the region of the left kidney. Professor Ogston operated and removed a small fibromatous nodule from the upper third of the left ureter. She left the Infirmary after a short stay, free from

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pain, except along the cicatrix, and she remained in good health till 1899, when she strained her side. Thereafter she had pain in the left side, severe attacks two or three times daily, and also pain in the old scar, associated with urinary symptoms. Palliative measures were tried for some time, but eventually a second operation was performed in January 1901 by Dr J. Scott Riddell. When the region of the left kidney and ureter was exposed, a recurrence of the fibromatous growth was found, the size of a walnut, attached to a large renal vein, dragging on the ureter, and narrowing it. It was found necessary to remove the kidney, upper part of ureter and growth in one mass. She left the Infirmary in March, apparently cured, and returned to the West Poorhouse, under Dr Gordon, in May, complaining again of pain in the same region. In June she began to show marked symptoms of wasting; her appetite was fair, her stools normal, there was no jaundice, and palpation of the abdomen failed to show any sign of new growth. She died somewhat suddenly on July 13th, and the autopsy disclosed primary carcinoma, involving the whole of the pancreas, with a number of cancerous nodules in the posterior surface of the liver. In his remarks on the case, Dr Gordon drew attention to two special points of interest:—(1) the fact that the patient recovered so rapidly and well from two serious operations, and that no sign of extraperitoneal growth in the abdomen could be detected; (2) the seemingly sudden growth of cancer—she was not cachectic till a short time before death.

Dr Irvine Fortescue read notes on a case of *congenital absence of femur* in an infant, and showed skiagram and photographs.

Editorial Notes and News

Resignation of the Editor.

THE Editor, Dr Russell, takes this opportunity of intimating to the friends and readers of *The Scottish Medical and Surgical Journal* that his resignation is in the hands of the Directors of The Scottish Medical and Surgical Journal, Limited. It would be inexpedient to dwell here upon the reasons which have led him to take this step. While, however, he regrets the circumstances which have necessitated his resignation at this time, he very gladly lays down the burden of Editorship, which, during the past five years, has to a great extent hindered his more personal literary work.

He takes this opportunity of officially taking leave of his staff and friends in Edinburgh, Dundee, Aberdeen and Glas-

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gow, and of thanking them very sincerely for the unbroken friendliness and cordiality which have marked his relations with them, and for their loyal co-operation in helping him to carry out his policy of making the Journal a truly Scottish Journal,—the mouthpiece of no one faction or clique, of no one School or City.

Representation of Scotland on General Medical Council.

A MEETING of the Scottish branch of the General Medical Council was held in the office of Mr Robertson, George Square, Edinburgh, the registrar, and, after the papers were examined, the President declared the result of the election of a direct representative to the General Medical Council as follows:—Dr Bruce, Dingwall, 975; Dr Norman Walker, Edinburgh, 854; and Dr Robertson, Glasgow, 618—majority for Dr Bruce, 121. There are altogether 4157 registered medical practitioners in Scotland; of these 1432 did not vote. 28 votes were rejected through informalities, and 250 were returned by the Post Office marked "Not found," "Dead," etc., or were received too late.

Election of Direct Representation for Scotland.

THE CASTLE, DINGWALL, *14th December* 1901.

To the Editor of THE SCOTTISH MEDICAL AND SURGICAL JOURNAL.

SIR,—May I venture to ask you to insert the following in your next issue.—Yours, etc., WILLIAM BRUCE.

Dr Bruce begs to thank the Scottish Registered Medical Practitioners, to the number of nine hundred and seventy-five, who, by their votes, placed him at the top of the poll at the late election.

Especially he wishes to express his most grateful thanks to the large number of those who have taken the trouble to personally congratulate him on his victory.

Now that the fight is over, he assures the constituency generally of his desire to give his utmost energies towards advancing their interests in so far as it may be in his power to do so during his term of office.

Promotion for Dr Welsh.

AS was expected, Dr Welsh, who is head of the Pathological Department of the Edinburgh Royal Infirmary, has been appointed Professor of Pathology in Sydney University. He has been but a short time in his present position, and the Infirmary staff will regret losing him. During his tenure of office his relations with the staff have been of the most satis-

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factory description, and in his hands the new arrangements in the Pathological Department have proved successful.

Dr Welsh's Successor.

WE hear that Dr Welsh's successor will probably be allowed to be a Lecturer on Pathology. This we entirely approve —firstly, because it keeps a man in constant contact with the whole field of pathology, and saves him from becoming a specialised crank; and secondly, because a man who is a teacher is a more useful man in the *post-mortem* room both to the students and the staff. One condition is however necessary, and that is that he should only be allowed to teach one class a day outside the Infirmary.

Passes at the Royal College of Surgeons, Edinburgh.

AT a meeting of the College, held on 16th inst., the following gentlemen, having passed the requisite Examinations, were admitted Fellows of the College:—John Jackson Berry, L.R.C.S.E., M.D., Pendlebury, near Manchester; Richard Horace Gibbs, L.R.C.S.E., Melbourne; George William Hardie, L.R.C.S.E., Newbattle, Dalkeith; James Phillips, M.R.C.S.Eng., L.R.C.P.Lond., Bradford; William Foster Rawson, M.R.C.S.Eng., L.R.C.P.Lond., Bradford; and Alexander Johnston Wilson, L.R.C.S.E., Calderbank, Airdrie.

New Books and New Editions

Appendicitis: Its Pathology and Treatment. By CHARLES BARRETT LOCKWOOD, F.R.C.S., Assistant-Surgeon St Bartholomew's Hospital. Cr. 8vo, pp. 287, with 52 illustrations. London: Macmillan & Co., Limited. 1901. Price 10s. net.

IN the work before us Mr Lockwood has made a valuable contribution to the literature of appendicitis. The method he has adopted is to describe some of the cases of appendicitis on which he has operated, giving a brief *résumé* of the clinical history, and then a description of the morbid anatomy and morbid histology of the appendices removed. After studying the clinical phenomena in the light of the pathological facts, each case is commented upon and its lessons drawn. The author himself admits that this method of study is somewhat tedious, involving as it does much repetition; but this is unavoidable, and the reader will be well repaid for the time and attention bestowed on the reports of the cases thus

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recorded. He may not always agree with Mr Lockwood's conclusions, and he will doubtless find that on certain points his own and the author's experience are totally different, but this seems to be a difficulty inherent to appendicitis—no two cases are alike, and therefore no two surgeons can agree on all points. We believe, however, that it is by work carried out on the lines which Mr Lockwood has followed that we shall arrive at such generalisations as shall be of help to us at the bedside.

Mr Lockwood classifies his cases on a purely pathological basis, to avoid the confusion which results from cross-classification involving the employment of such terms as "simplex," "gangrenous," "relapsing," "perforative," "recurrent," etc. The term "catarrhal appendicitis" he excludes entirely, as he has repeatedly found "that the appendicular catarrh is only a small part of the disease, and not the essential part."

On this pathological basis Mr Lockwood distinguishes eight groups: (1) appendicitis with ulceration of the mucosa; (2) appendicitis with ulceration of the mucosa and bacterial invasion; (3) appendicitis with ulceration of the mucosa and with fæcal concretions—foreign bodies—and their complications; (4) appendicitis with stenosis and its complications; (5) appendicitis with sclerosis and obliteration of the lumen; (6) appendicitis with lymphangitis and lymph-adenitis: (7) tuberculous and actino-mycotic appendicitis; (8) appendicitis complicating malignant and other diseases.

It must be admitted that this classification is very precise, and on the whole logical; but it does not differentiate between separate forms of the disease, but merely between different phases or stages of it. Mr Lockwood himself admits on page 228 that it is impossible from clinical symptoms to assign a given case to its proper pathological group. At the same time he holds, and we agree with him, that we shall only arrive at a clinical classification along the lines of pathological investigation. Two chapters are devoted to the anatomy and histology of the appendix. The author has apparently overlooked Berry's work on the histology of the appendix, especially with reference to the lymphoid tissue. We do not agree with his statement that "the surgical value of the longitudinal bands is very small." On the contrary, we have repeatedly found the anterior longitudinal band a most valuable guide to an appendix embedded in adhesions.

The next ten chapters contain the records of the author's cases, grouped under the headings above quoted. They do not lend themselves to abbreviation, but are well worthy of study. The modern tendency in surgery to explain all pathological phenomena by bacterial action is well illustrated in regard

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to the concretions found in the appendix. Some years ago they were all apple-pips, cherry-stones, date-stones, or small shot. Later they resolved themselves into "masses of inspissated fæces." Now the author tells us they "are but masses of bacteria" (p. 33).

The general reader will find the last seven chapters of most interest. They deal with the clinical aspects of the disease, and with its treatment. Here, as throughout the book, the clinical histories are clearly and succinctly stated, and the symptoms correlated with the pathological appearances. The clinical symptoms are well described—but what are "bauba rigma," which are said to occur rather frequently in the neighbourhood of the cæcum? (p. 195).

With regard to treatment, the author takes the surgical view, and advocates operation. He says, and we incline to agree with him, that the danger of operating during acute appendicitis has probably been exaggerated. In this connection he remarks, with more truth than clearness, that "it is easy to confuse cause and effect, and attribute a fatal ending to the operation rather than to the disease." This is not an example of confusing cause and effect, but of confusing between two causes.

In the treatment of suppurative cases, Mr Lockwood approves of an effort being made to remove the appendix. In this we agree with him, and also in his belief that the dangers of infecting fresh areas of peritoneum are exaggerated.

A useful chapter on the after-treatment of cases of appendectomy concludes the volume.

The work is well illustrated, many of the microphotographs of diseased appendices being of great aid in interpreting the text.

"SCOT."

Glasgow Hospital Reports: edited for the Committee of Management by GEORGE S. MIDDLETON, M.A., M.D., F.F.P.S.G.; HENRY RUTHERFURD, M.A., M.B., C.M., F.F.P.S.G.; and WALTER K. HUNTER, M.D., D.Sc. Vol. iii., with 53 illustrations. Glasgow: James Maclehose & Sons.

THE third volume of the Glasgow Hospital Reports contains many contributions of interest and some of real value. On glancing through the work one is inclined to comment on the title. Considering the accuracy in recording cases which is now maintained by resident officers in all great hospitals, it would seem reasonable to expect that a somewhat larger allowance of space in such a volume might be devoted to

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analyses of groups of cases and comparison of symptoms with *post-mortem* records. Such elementary statistics involve no great difficulty in compilation, are of real assistance in the clinical study of disease, and can rarely be obtained except in such works as hospital reports.

Looking more closely into the work, we are glad to learn in the first article that the work of re-cataloguing, mounting and re-mounting the specimens collected by Dr William Hunter in the Hunterian Museum has been carried out, thus making of use an historical collection of real value.

The next few articles are concerned with obstetrics and gynæcology. Of these we may call attention to the statistics of thirty years' work of the Glasgow Maternity Hospital, compiled by Dr Robert Jardine. The adoption of more careful antiseptic precautions in 1896 appears to have been urgently required. As suggested by the author, the comparison of the results of treatment of complicated cases in the three decades considered would be of great interest.

An important analysis of the cases of eclampsia in the Maternity Hospital during the past fifteen years has been made by Dr Munro Kerr.

Dr Murdoch Cameron gives a very clear account of the indications for, and of the method of, performing Cæsarian section, and includes a record of truly admirable results.

Among the numerous contributions which follow, we have space only to refer to a few.

With his paper on "Cardiac arrhythenia, associated with epileptiform crises," Dr Alfred Webster gives a series of pulse tracings, which yield weighty support to the view that the epileptiform seizures occur as the result of anæmia of the brain, due to the cardiac failure. This paper is full of interest, and forms an important addition to the literature of the subject.

Dr James Adam, in his paper on "Asthma," concludes that in that disease there are two factors required, viz., a toxic condition of the blood and a lesion of the respiratory tract. He ascribes any idiosyncrasy in the sufferers rather to a tendency to the formation of excessive quantities of "convulsive" toxins than to a predisposition to the disease in the nervous system. Many clinical points in the disease are mentioned, and recommendations regarding treatment are given.

A most careful analysis of the sensory phenomena in twenty-seven cases of hemiplegia has been made by Dr Marion J. Ross. The presence or absence of the stereognostic sense is not alluded to.

The gravity of the prognosis of empyemata in childhood when associated with broncho-pneumonia, and the comparative

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rarity of tubercular empyemata in early life, are among the points of interest in the paper by Mr Cowan.

The influence of chickenpox, when complicating scarlet fever, in increasing the liability to renal complications, is dealt with by Dr John G. Gray.

Dr T. K. Monro records a case of Marie's hereditary cerebellar ataxy, in addition to two other cases of nervous disease.

Mr A. E. Maylard enters a plea for the open-air treatment of many forms of tubercular disease as they are met with by the surgeon, his desire being that such cases should be dealt with in special institutions rather than in the surgical wards of a hospital.

Dr Walter Hunter records two unusual forms of nervous disease, both very worthy of remark. A successful operation on a post-rectal dermoid is described by Dr H. Rutherfurd. Ophthalmology is represented by records of cases of traumatic ocular paralysis by Dr Leslie Buchanan, and by a paper on penetrating wounds of the eye by Dr Maitland Ramsay. Contributions dealing with chronic inversion of the uterus, tubal gestation, septic diseases of the kidney, etc., will well repay careful reading. The total number of papers amounts to twenty-two. The preparation of the volume and the excellence of the illustrations leave nothing to be desired.

The Therapeutics of the Rontgen Rays. By Dr E. SCHIFF, Vienna. Translated by W. DEANE BUTCHER, M.R.C.S. London: Rebman Limited. Price 1s.

THIS is a really useful little pamphlet. So many are now experimenting with the rays, who have little experience either in their use or in dermatology, that a short account of the method of employment and of the diseases in which they are suitable should be much appreciated.

Rather an undue portion of the book, which might profitably be spared for other more serious conditions, is devoted to the treatment of Hypertrichosis. The reference to the treatment of malignant growths, such as rodent ulcer, is of the briefest, and characteristically ignores all reference to the work which has been done in this country. The obvious benefit of the rays in rodent ulcer has convinced many doubters of their great value.

Several pages are devoted to the theory of their action, or rather, one should say, to the theories, for they are exceedingly numerous, and at present our information is not sufficient to

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enable us to decide which is correct. Discussing the merits of hard or soft tubes, which is at present a burning question, while admitting that the soft tube is more rapid and powerful in its effects, Schiff indicates a preference for hard ones, as less likely to set up sudden and unforeseen reaction.

The pamphlet concludes with a few paragraphs on the bactericidal action of the rays, as to which, as in most things connected with them, there is much difference of opinion.

The translation has been well done, and we can strongly recommend the modest outlay requisite for its possession.

Saunders' Year-Book of Medicine and Surgery. Under the general editorial charge of GEORGE M. GOULD, M.D "Surgery." Cr. 8vo, pp. 610, 110 illustrations. London and Philadelphia: W. B. Saunders & Co. 1901. Price 26s. net.

ALTHOUGH this work has changed its title—it was formerly known as the "American Year-Book of Medicine and Surgery"—it is still under the able guidance of Dr George M. Gould, who has retained the services of the collaborators, who have made it one of the best productions of its kind. Last year we welcomed the change which divided the work into two volumes—one devoted to medicine and the other to surgery—and we are pleased to find that this arrangement has been adhered to in the present issue.

One of the features of this year-book is that the compilers supply critical notes on the papers quoted where this seems called for. We only regret that these commentories are not more numerous. From personal experience we can testify that this work is of great value to those who have frequently to refer to the current literature of surgery. The work of reference is greatly facilitated by the excellence of the index.

"SCOT."

Notes on Physiology. By HENRY ASHBY, M.D.Lond., F.R.C.P., Physician to the Manchester Children's Hospital, formerly Lecturer on Animal Physiology, Owen's College. Small 8vo, pp. 406. Seventh edition. London: Longmans, Green & Co. 1900. Price 5s.

THIS is another little book whose vitality has kept it going for a long time, since 1878, and within its limits it is full, accurate and up to date. It is well illustrated, and should serve admirably as an introduction to physiology for junior students.

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THE SCOTTISH
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MELANCHOLIA AND THE TOXÆMIC THEORY
A CLINICAL SKETCH

By T. S. CLOUSTON, M.D., F.R.C.P.Ed.

THE more one sees of mental disease in its typical varieties, the stronger becomes one's conviction that hereditary brain weakness is the prime factor in its causation. The more carefully each case is studied in its etiological relations, the more surely is the conclusion driven in on one's mind that a fateful ancestral risk hung over the patient from his birth. Yet those terrible conclusions do not mean that each case was inevitable. Theydo not imply that there is no room for preventive psychiatry. No doubt many individual cases of mental disease are unpreventable. It is a fate laid on a man from which there is no escape. His ancestors had broken physiological law and he must pay the full penalty. But fortunately for medicine and mankind that doom may be averted. By the application of the knowledge we possess many brain potentialities of a pathological kind have been prevented from arriving at actualities, and through the extension of that knowledge we may reasonably hope that such arrestments of mental disturbance will be more possible in the future. One of the great difficulties of preventive mental medicine is that its principles, to be effective, should be applied early in life and often continuously thereafter. The doctor is seldom given a chance of doing so. He is only called in when the mental breakdown has taken place. He is not consulted in most cases when the preliminary threatenings occur, a time in which he could be of most service. Those warnings are apt to be subtile and not understood. They often involve slight alterations in brain and

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mind functions, which mankind regard as purely mental, or moral, or spiritual, with no medical aspect. Slight changes in temper and disposition, in power of will and work, in social aptitudes and mental reactions occur, these being accompanied by such slight bodily signs that they are not reckoned as illness or disease at all. As mind and brain are to body in delicacy and complexity of function, so are the indications and principles of mental and nervous preventive medicine to those of ordinary "public health." One deep-rooted tendency of human nature severely handicaps and obstructs the doctor in this branch of medicine. Most men look on any possible tendency to mental upset with such feelings of intense dislike and shame that they conceal or explain it away with great and perverse ingenuity. No family secrets are guarded with more care than strong hereditary tendencies to insanity. No Hindoo or savage conceals his plague-stricken wife more jealously from the health officer than does the aristocratic mother of marriageable daughters hide the fact that her father was insane. Hence the measures of counter-action that ought to be begun from birth, or before it Dr Ballantyne would tell us, are neglected. Diet, environment, education, attention to infantile nervous ailments, choice of occupations, special training in habits of self-control, avoidance of alcoholic excess and sexual errors, and suitable choices of mates might do much to reduce the number and intensity of the higher neuroses, but are seldom systematically carried out in the families where they are most needed. I am persuaded that there is a great future for preventive psychiatry, whereby the sum of human misery will be lessened, and the effectiveness of human brain power much increased. I have seen a few instances of the success of such measures in families not too far gone, but I have seen far more examples where degeneration and extinction took place through the neglect of such preventive means in two or three generations, this process being accompanied by much crime, moral error and unhappiness. Few things would sweeten and strengthen civilised society more than a perceptible reduction of its psychoses, and their hereditary cousins the convulsive diseases and the neuroses of sensibility.

The genesis of true insanity is as yet very obscure in its causation and symptomatology. Most authorities are however

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agreed that when anything that can properly be called mental disease appears for the first time in a family it is apt to have, as its most obvious mental symptom, an error in the affective rather than in the reasoning or the volitional faculties. This error is not a blunting nor a perversion of feeling, but a morbid accentuation in degree or kind, or both, of the misery that is normally felt when things go adverse in a man's life. This undue and abnormal depression of mind is so marked a thing that the disease it represents was naturally called "Melancholia," and I believe whatever classification of the Insanities is adopted in the future this name will always retain its place. It so vividly and aptly describes to the patient, the layman, and the doctor the mental essence of the disease present, that I cannot imagine it displaced by any other term.

The exercise of all organic functions, all out-put or transference of energy in a healthy living organism causes a feeling of organic well-being. This feeling is a law of life, just as energising in some form is a necessity. One cannot conceive its absence or reversal, and yet life go on in the world. No doubt pain, fear and misery are all danger signals to avoid or to get rid of what is hurtful to life. They all cease in a healthy organism when the immediate occasion of them passes off. They also, in such an organism, cannot go on for any great length of time, even if these causes go on operating, for the nervous apparatus through which they arise runs down, as it were. There is no such thing as "constant pain," mental or bodily, in any healthy organism. A mother loses her child, a man loses his fortune, and if they are healthy "time cures" the misery. It cannot go on for long in great intensity. It exhausts the pabulum on which it feeds. The key-note of melancholia is persistence of mental pain beyond physiological limits. The sensory apparatus through which it is felt won't run down till the diseased condition of that apparatus is recovered from.

When the pre-existing condition of the emotional apparatus in a melancholic patient or in his ancestry is looked into, one usually finds a state of "over-sensitiveness." The reactiveness of feeling to stimuli had been excessive. The patient, or his mother—it is certain that the emotional qualities of the man

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are commonly inherited from his mother, and those of the woman from her father—"felt things too keenly," or was "unusually sympathetic and imaginative." The emotional reflex was exaggerated. This no doubt means that the neurons in certain tracts of the mental area were unstable in their molecular and chemical constitution, and therefore passed into the katabolic condition too easily and remained too long in that state. Such a quality does not, however, mean to its owner only intense mental pain from insufficient causes, but it usually also implies pleasure out of proportion to the causes in operation. Given a brain strongly accentuated in those directions, and let its owner be the subject of any form of toxæmia, or anæmia, or exhaustion of its energies, and you have all its weak points accentuated. You have a necessary tendency for its katabolism to result in painful subjective feelings of a kind verging on the morbid; in fact, you have the foundation of technical "Melancholia." If in the progeny of this "over-sensitive" man or woman this emotional katabolism is still more accentuated, as is hereditarily likely; if this sort of brain is in youth "educated highly" and thus, while plastic and undeveloped, feeling has been more cultivated than inhibition; if, subsequently, life has been one of stress and strain, if the general health and body nutrition get below par, if the turn of life with its ebb of vital energy has set in, and senility approaches in the shadow of unfulfilled ambitions and an unsuccessful life—then we have the materials for the making of an attack of true typical Melancholia. All emotional stimuli are then apt to excite undue mental pain, just as any sensory stimulus will always rouse neurgalic pains in a hyperæsthic subject, or convulsive spasms in a tetanic one. There is also a basis for the painful feelings and delusions of the melancholic in a constant vague sense of organic ill-being, which no doubt means a reversal of the law through which the chemico-vital processes of cell anabolism and katabolism always in health keep up a constant sense of organic well-being throughout the whole animal kingdom. All vital energising should invariably give either conscious pleasure or organic satisfaction. Every such process is more or less a cortical stimulus, and as such affects the condition of the mind. No stronger proof can be afforded that the physiological has passed into the pathological than

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when the mind organ is disturbed instead of being soothed by the never-ceasing stimuli of normal action in its satellites and servants the organs of sense, the skin, the muscles, the bones, the heart, the lungs and the alimentary and eliminating organs. All those are "represented" in the mental organ in the brain, not only that it may control and regulate their action, as it does, but also that through the afferent nerves it may have a feeling of organic well-being and deep-seated vital satisfaction, and so keep up its own activity. Without these stimuli, in fact, the mental and bodily functions of the cortex would not develop or work at all. Any conception of a human being, or of any higher animal that did not place its centre and *raison d'être* in the mental cortex, is an unphilosophical and mistaken one. Every other organ is a means to an end. From a medico-psychological point of view no doubt the persistent loss of organic well-being and the conscious feeling of misery instead of happiness in life means that nature has gone one step towards organic dissolution. It especially seems certain that when the strangest and most inexplicable of all the painful mental symptoms of Melancholia arise and persist—viz., the reversal of the love of life and the strong desire to put an end to life—that such reversal is the sure seal of nature that the death of the individual who is so affected is the right thing for the race. No signal could be clearer or more direct. But the object of medicine being to "obviate the tendency to death" in every shape, this indication of nature towards death should be to us a special warning and stimulus to fight and overcome the disease which has set up such a signal.

Those general principles in regard to typical Melancholia, which no doubt in obedience to the law which governs mentalization in a Scotsman I have extended far more than might have seemed necessary in what was intended to be a mere clinical sketch, would be incomplete and even misleading were I not briefly to refer to two other points. One is the undoubted solidarity of function and structure which is so striking a characteristic of the brain. It has multitudinous functions which are distinct and localised, but as a practical matter of fact no function can be affected by disease without some pathological effect being observed in some other function. We cannot have a mental disturbance without some nutritional,

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motor or sensory change. Such change may in some cases be very slight, but as compared with the man in health it is there. So with structural morbid changes—who ever saw a paralysis ever so localised without some sensory or nutritional or mental accompaniment? Therefore in Melancholia, which in its milder forms is an affective disturbance and the mental disease nearest sanity, we almost always have some intellectual, volitional, circulatory, or nutritional disturbances.

The other consideration is of even greater practical import. It is that of the mental action and re-action of higher brain function on lower organic and nutritional processes. There is good evidence that an intensely painful emotion roused by an outside moral cause cannot exist in the higher brain centres for any length of time without affecting the bacterial life within and without the organs, the leucocyte action, the metabolism of almost every cell in the body and the chemical composition of every secretion and excretion. The gastric juice if taken from the stomach in such a case is found to have lost its full digestive power, the temperature, pulse and arterial pressure are changed, the vermicular action of the bowel muscle and no doubt the constitution of the bowel contents is altered, the number of the intestinal bacilli is increased, the urinary and skin secretions are changed and body weight is lost. Those facts lead to an enormous amount of mere "treating of symptoms" in Melancholia, instead of the more scientific methods of setting the *fons et origo mali* in the cortex to rights. But then, in justification of such treating of symptoms, there is the undoubted fact which of late has assumed so important a position in psychiatric medicine, that bodily diseases and toxæmic conditions of various kinds, endogenous and exogenous, do undoubtedly by their action on the brain cortex cause insanities of all sorts. Alcohol, lead, arsenic, syphilis, diseased rye, the absence of thyroid secretion in the blood, altered intestinal secretions, the toxins of septicæmia and of influenza, morbid urinary products are all causes of the disease.

The latest pronouncements in this country, following up Continental investigation, on this aspect of mental disease are by Ford Robertson, Mott, and Bruce and Alexander. The last two authors say :—"We believe Melancholia to be a disease of dis-

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ordered metabolism and that treatment should be directed towards increasing the excretion of waste products of this metabolism through the channels of the urinary and integumentary systems."[1] Ford Robertson, evidently profoundly influenced by his own brilliant researches and discoveries proving the universality of toxæmic irritation along the course of the whole vascular system in general paralysis, says: "The various toxic conditions which tend to affect the nerve cells may result from (1) exogenous toxic agents; (2) infections; and (3) auto-intoxication and auto-infection." . . . "In concluding, I would reiterate my conviction that by far the most important factor in the pathogenesis of insanity is toxic action. I would further say that the large majority of cases of insanity are not primarily diseases of the brain at all, but are dependent upon the action of toxines derived from elsewhere, which affect the functional activity of the cortical nerve cells by disordering their metabolism and often permanently damaging or even destroying many of them. The common view that the 'mental disease' is the primary condition, and that any accompanying 'bodily disease' is secondary, is in general founded upon an erroneous conception of what is taking place."[2] Mott especially dwells on the auto-poisoning by choline and other products of nerve degeneration. Those are the modern pathologist's latest views of the etiology of insanity. I do not agree with them as thus stated. Their absoluteness is far too great and does not take into account at all sufficiently the mental, ethical and hereditary facts, and if this is so it is a premature and incorrect scientific generalisation. Toxæmia is in many cases unquestionably the chief *exciting* cause of many cases of insanity, but it is the "primary condition" in very few. In most really typical cases it is only a link in a chain of causes. It is most important that it and bacterial effects with the protecting action of the leucocytes and their effects on the structure of the brain cortex have been recognised and described by pathologists. But the "primary" and immanent condition is a hereditary brain weakness and instability without which toxæmia will not cause Melancholia or adolescent insanity with its typical dementia—these together

[1] *The Lancet*, August 24th, 1901.
[2] *British Medical Journal*, October 26th, 1901.

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being by far the most numerous and the most characteristic of the psychoses. Given a perfectly sound brain cortex by heredity, no such auto-toxins as will thus affect its mental functions will ever be created. Even the exogenous toxins though they may affect the mental actions will not set up insanity properly so called. Even going as far as I can possibly go with the modern toxæmic school we must need the two conditions, viz., the brain cortex predisposed to insanity, and therefore potentially diseased, as well as the toxin itself to alter the katabolism of the unstable mental cell as it is altered in the real insanities. As well might the sudden indigestion from mental worry be called the "primary" condition. Mott's theory that the brain substance forms by its dissolution poisons which further destroy it seems to me to need far more proof than he has given us.

The old Hypocratic idea of Melancholia being due to an over-secretion of "black-bile" is thus revived in principle, and the treatment of vigorous purging by helebore recommended by the father of medicine is again in vogue. Anti-toxins too are being looked for and used by many men in our department to cure toxæmic insanities. All such ideas and practice are to be commended and encouraged, but they should be qualified by the great fact that in very many cases it is the primary cortical disturbance which has caused the digestive troubles, the constipation, the urinary disturbances, the excess of bacteria with the leucocytosis and toxins, and that it would be incorrect theory and bad practice to treat the secondary while we neglect the primary causes. It is indeed of the highest importance to distinguish between the two classes of cases, viz., those in whom the disease has originated in the cerebral cortex, and those in whom it has been secondarily caused by something *ab extra*. In the former feeding may be the essential indication, while in the latter starvation and purging may be the right therapeutics. In the former strychnine, iron and quinine, alcohol and paraldehyde may be curative, while in the latter calomel, salol, the anti-toxin serums, diuretics, diaphoretics and thyroid extract may be indicated.

Far more than half the existing mental disease or defect occurs during either the formative and developmental or during the decadent and senile periods of life, and is caused, I believe,

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primarily through the cortical nutritive arrests or perversions incident to nerve cell development or retrogression. In the developmental period we have all the idiocy and congenital imbecility, the small amount of evanescent child mania and melancholia, the pubescent and adolescent insanities and the cases of "*dementia præcox*" which I include in my adolescent cases. I do not think there is any evidence whatever that toxæmia is either the cause or accompaniment of the developmental arrest of idiocy, notwithstanding the ingenious hypothesis of D'Abundo and Agostini as to the possibility of such a poison passing into the fœtus from the maternal blood. Nor is there any proof of its action in the developmental disturbances of adolescent insanity. About one-fourth of the pubescent and adolescent cases are melancholic. More than half of the climacteric and senile cases exhibit melancholic symptoms. Admitted that some of the acuter senile cases do show signs in the brain cortex and vascular systems of an irritation that may have been due to the action of toxins, most of the climacteric cases and less acute senile cases do not exhibit during life or after death any provable toxæmic symptoms whatever.

On the other hand, there can be little doubt that toxæmic conditions do play the chief part—though in many not the *primary* part—in general paralysis, puerperal insanity, alcoholic and syphilitic insanities, rheumatic and gouty insanities and possibly phthisical insanity. In regard to some cases of epilepsy and epileptic insanity, the toxæmic case is strong but not yet proven. There are certain symptoms which should always suggest toxæmia in any case, viz., pyrexia, convulsions, headaches, vivid hallucinations, perversions of sensibility, stuporous and confusional states, abscesses, skin irritations, inhibition or marked interference in the cardiac and vascular actions, very foul tongue, fœtid stools, and absence of chlorides in the urine.

But to revert to Melancholia, the knowledge of which is more instructive and the treatment of which is unquestionably more important than any other form of mental disease to the general practitioner of medicine. Like the human countenance and mind, it presents itself in types bewildering in their variety. Let us look first at the most common, the most innocent, the

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least toxæmic and the most curable of these. Every doctor has had to do with it, every man and woman of full age has seen it in his friends and acquaintances. Here is my latest example. He was a man between thirty and forty, of a grand physique from top to toe, with not a "stigma of degeneration" about him. He came of a professional breed of distinctly neurotic history. He had personally been of very hypersensitive mould, "feeling things" intensely, but, with the Briton's pride of inhibition, seldom showing his emotions. He was hard-working, religious and steady. A cataclysm occurred in his life. His affections were strongly roused, and things went wrong in all sorts of ways. His strength of emotion was too great for his power of inhibition, and he could not quietly set his teeth together any longer, but exhibited to his intimate friends—to no others—signs of intense depression, with foolish fears and painful imaginations. When he saw me he had lost his control over himself completely. He wept, could not sit still, his eyes were full of excitement, and his face flushed. He hinted at suicide because he "saw no other way out of it." For the first quarter of an hour of his visit his condition was such that I should have had no difficulty whatever about signing a certificate of insanity, with plenty of relevant "facts indicating insanity observed by myself." But observing, as I thought, a certain shallowness in his mental symptoms, and finding no abnormality whatever in his pulse or tongue or temperature, hearing that he was sleeping well and digesting well, and seeing that he had no trophic signs of deep Melancholia, I simply talked to him for a long time and let him talk to me, made him smoke several cigarettes, and tried by suggestion and the exercise of my own mental equilibrium on his disturbed balance to dominate and influence his emotional condition. The result was that he left my consulting-room, for the time, a technically sane and a comparatively cheerful man. He took some simple nerve tonics and sedatives. The scene described was repeated several times, but he got over his emotional depression in a few weeks. Now where does any toxæmic theory come in in such a case? I take that as an early treated example of a vast mass of cases of Melancholia in general practice where the mental mischief is not deep-seated, where it is entirely due to the original hereditary constitution

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and the undue emotional re-activeness of the brain, which was roused into a morbid working by outward circumstances. I cannot, with Ford Robertson, include such a case under disturbances caused by "sensory impulses." The "impulses" were purely mental. No doubt this was rather a marked case of its kind, but I have taken it as being typical of the genesis of Melancholia without a suggestion of toxic action. Many such cases, no doubt, if the mental symptoms last long, exhibit trophic disturbances, but I see no reason to explain these disturbances in any other way than through the unfavourable influence excited by the brain cortex on the vaso-motor, the digestive, the metabolic, and the nutritive processes.

I shall now take a case at the other end of the scale by way of contrast, in which toxæmia was proved to the hilt to have been the directly exciting cause of the mental and other symptoms, This was a married woman of 36, of correct habits, never previously insane, but whose mother committed suicide after child-birth, and whose mother's brother also put an end to his own life; while two of her step-sisters by the same mother also committed suicide. She had eight children, the last being born 19th December 1901. For a few days before labour she was mentally depressed. She was delivered in the Maternity Hospital. Labour was quick and natural, but within 36 hours after delivery she became acutely melancholic, and was sent to the Asylum within 48 hours after labour. Her pulse was 128, temperature 100·2°, and lochia absent. Mentally she had most vivid hallucinations of sight and hearing, delusions of fear, complete incoherence of speech, absence of attention, and total loss of control. Her features soon became pinched, tongue dry, sordes accumulated on her buccal mucous membrane, and her eyes got sunken and dull. After four days the temperature went down to normal, and never again rose above it till the fourteenth day after admission. She got at first stuporose, and then a little more coherent, but on the fourteenth day the temperature rose to 103·5°, and she died comatose on the fifteenth day after admission. In the fundus of the uterus was found a small septic area, the tissues round it being soft and undergoing a necrotic process. Dr Rutherford and I had tried every known remedy and mode of treatment. Now, to produce the mental symptoms in this

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case there were clearly two causes in operation, the strong heredity and the direct toxæmia. The mental symptoms would not have occurred but through the combined operation of both. Is it philosophical or scientific to exalt the one and ignore the other? It is very instructive, too, that the mental symptoms began before distinct signs of the toxic poisoning appeared.

Here is another puerperal case with strongly septic indications, but with a different issue. A woman of 22, whose father was "nervous," who had an uncle insane, and whose own diathesis was neurotic, was married about a year before I saw her, and became pregnant soon thereafter. During her pregnancy she was at times moody and irritable, but was always well physically. She had an easy confinement at the full time. Things went well till the fourth day, when the temperature ran up to 101°, pulse 100, and the lochia became septic. This subsided after appropriate treatment, but the catheter had to be used for retention of urine for ten days. Whenever the temperature rose she showed mental symptoms. She was talkative and excitable, and less taken up with her baby than she should have been. Then she got confused and depressed, and suddenly tried to kill her child and take her own life, this being followed by certification. On admission to the Asylum she looked anæmic, yet slightly flushed, temperature being 98·4°, and pulse 100. There were nervous twitchings of the facial muscles, the bowels were constipated, mammæ tense and tongue furred. The retention of urine persisted. Her temperature never rose above 99°. She had more than once a bright erythematous redness over the skin of her face, which we considered septic in origin. She was partially stuporose, restless, inattentive, and sleepless. She got appropriate general treatment, good nursing, and 5 grains of quinine thrice a day at first. Her bowels were kept well open with a saline mixture, and she got much milk and water to drink, and was kept in bed for three weeks. She gradually improved in body and mind, passing in early convalescence while no doubt her cortical cells were undergoing repair from the chromatolysis which septic poisoning is known to cause, through a marked stage of irritability, unsociableness, unmanageability, and delusions of suspicion. She made a good recovery

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in four months. The mental symptoms appeared in this case during pregnancy. Were there toxins in existence then?

I shall now give a short sketch of two cases intermediate in character between the three I have referred to, with a view of further illustrating the possible factors in the causation of Melancholia. The first was that of a hitherto healthy professional man of thirty-four, whose sister had been melancholic and recovered. He was a temperate, self-controlled, cheery man, with no mental or moral causes of insanity in operation. He took an acute attack of pneumonia with bad empyœma, and had to have resection of a rib. He thus got reduced extremely in strength and showed some depression of mind, but was gradually convalescing when, as ill luck would have it, a religious friend, deeming the opportunity suitable, attacked him vigorously on his religious state. This turned the whole current of his feelings on the least comfortable aspect of religion, and he became at once excited, gloomy, restless and fearful. He moaned about his sins, he had a haunting fear of impending harm, and he refused to take food. He soon had to be sent to the Asylum for treatment and safety. He was on admission feeble, shaky and flabby, with an extremely feeble heart's action, and an almost imperceptible pulse at the wrist of 120, as if an inhibition were being exercised over his circulatory system, but a normal temperature, a raw tongue with patches of creamy fur, bowels constipated, and a repulsion for food. Within twenty-four hours he was in a condition of unconscious melancholic delirium, with most terrifying hallucinations. He seemed to think he was "infecting" every one around him with some fatal disease. His heart's action was so weak that we considered him in grave and immediate risk of his life. I have seldom seen a finer example of "acute excited Melancholia." The attacks of this wild delirium came in spurts, with intervals of exhausted calm. We tried to keep him in bed by means of attendants, but that increased his struggles greatly, and we had to let him roll about the padded room under observation. Liquid food, strophanthus and brandy were given him with the utmost difficulty, and paraldehyde to secure sleep. This state lasted a fortnight, and during the whole of this time I considered his life in much jeopardy. Looking at the symptoms present, there were many charac-

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teristic signs of a toxæmic delirious Melancholia. The symptoms gradually abated, and in two months he was convalescent, the heart's action being the last to become normal.

Now look shortly at another case of a common enough type. A young professional man of twenty-two, whose mother had a short and mild attack of Melancholia, also at twenty-two, before her marriage, had been "melancholy" for six months at the age of fifteen and completely recovered. His first symptom of mental instability in the present attack was shown by his chucking up a good appointment leading to a career, and then going in for a frightful bout of sexual excess, which reduced his system badly. He took an attack of typhoid in this exhausted state in which he became very delirious, and on coming out of which he "did not feel right in the head." He soon had vivid hallucinations of hearing, refusal of food, morbid delusions of poisoning, and became violently homicidal and suicidal. He turned out to be one of the very worst and most determined homicidal and suicidal cases I ever saw. He was anæmic, flabby in his muscles, his tongue had a yellow fur, his pulse and his heart's action were weak, his bowels constipated, and a series of septic abscesses formed in his extremities. He is now after three months little improved, and I think the attack will kill him in time.

Both of these cases had some of the most characteristic symptoms of the toxæmic insanities, and it would have been altogether wrong to have ignored toxic poisoning in their treatment. Yet it would have been equally wrong to have ignored the strong heredity in both; the pneumonia, the empyema and the morbid religious excitement of the first, or the dangerous age of adolescence, the sexual exhaustion and the typhoid poisoning of the second. Both cases show what a complex question the etiology of insanity is and how careful we ought to be not to arrive at premature induction in regard to it.

Finally, I shall sketch very shortly the essential features of four cases in which the brain decadence of the climacteric and old age came in. A gentleman of fifty-seven with a slight neurotic heredity, who in quite early youth had an attack of syphilis and was "cured," had married and begotten a

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number of robust and rosy children, had money losses and business worries and became melancholic, with hypochondriacal delusions and insomnia. His bowels were constipated and health generally somewhat run down. His pulse was always over 100, with high tension, but with no rise of temperature. This feature of a high pulse and high tension rate in certain cases of Melancholia, to which Dr Lewis Bruce has lately drawn attention, is one which I have long observed and which puzzles me much. I am not satisfied it is always toxic in origin. It has not received the attention it deserves. I don't like it in a marked and persistent form in any case. I have tried every sort of cardiac sedative and vaso-dilator drug but with no effect on the mental condition. Treating symptoms, even important troublesome symptoms, in mental disease is generally an unsatisfactory business. You must treat the brain cortex and the "whole man" to do much good. This case had in addition marked hallucinations of smell—a bad sign—and suicidal tendencies, with an attempt. But he was a gentlemanly, reasonable melancholic, who could always pull himself together and did his business correctly. Every sort of treatment was adopted, yet he is to-day, though now well-nourished and fresh-looking, uncured, and, I believe, never will be well. Was the early syphilis, or the climacteric, or the business losses, or an obscure toxic irritation the chief factor in causing his disease? Or were they all needed in combination to produce the results?

A lady of fifty-five, whose heredity was unknown, had a second attack of Melancholia, the first being during lactation twenty years before, with a quick pulse of over 90. Some bodily symptoms existed suggesting slight unilateral paresis of face, and mental symptoms in which a reversal of affection and homicidal feelings towards her husband and children were marked. This lasted for almost two years with partial intermissions. I tried every therapeutic and environmental measure that I could think of. In despair I blistered her severely over the back of the head and neck and repeated this three times. Her whole symptoms disappeared like magic and I never got more credit for "a wonderful cure." How could any toxins have been affected by the blistering?

A lady of sixty-eight had an attack of Melancholia with

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fears, depressions, delusions and loss of control. I could ascertain or detect no cause for this but advancing age. There were at first no signs of organic brain disease. But in a month, commencing motor paresis began to appear, and in two months she died of paralysis. It was clear that the original mental symptoms resulted from what I call "acute old age," with the beginnings of brain softening. But she had often feverish eyes, and a very quick pulse of 110, with sometimes a temperature of 100°. Did toxæmia bring on the brain softening? At the time I concluded that it had done so.

A man of seventy-eight with no ascertainable mental heredity became depressed, "hysterical" and hypochondriacal, refusing food, and saying he had no throat or stomach. These conditions would last for an hour or two, and then he would settle down into a quiet, reasonable old man. This alternation of sane and insane states went on for six months, when he died rather suddenly. Can such a series of symptoms be better explained by calling them toxæmic than by saying they were pathological incidents in the ordinary downward progress of a senile brain?

I was to have sketched a case of a common sort in which a solitary-living old maid or bachelor becomes melancholic and morbidly suspicious, this being accompanied sometimes by auditory hallucinations—all those mental symptoms resulting apparently from mere want of social stimulus to the brain cortex, just as a child becomes dumb through getting deaf, without any suggestion of toxic poisoning. In fact, when one goes over one's case-books and notes of cases it is surprising how many instances of mental disease are found with no proof or indication whatever of toxæmia in their etiology. One would like to get hold of and believe in the general application of so satisfactory and simple a theory of insanity, but I cannot see that the clinical and hereditary facts will bear it out. Mental disease is, in fact, too complex a result of brain evolution on wrong lines or of reversion to be explained by any single etiological factor.

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NOTES ON SURGICAL CASES

By JAMES LAURIE, M.B.,
Surgeon, Greenock Infirmary

I. Aneurysm of the Femoral Artery: Extirpation: Recovery.

J. C., aged 44, grocer's assistant, complained of a painful swelling in the middle of his right thigh. On examining it I found it was the size of a Tangerine orange, and pulsating, firm and elastic; the skin over it was freely movable. I diagnosed an aneurysm of the femoral artery, and advised him to come into hospital, which he did accordingly on 11th January 1901. His condition on admission was as follows:—

There is a rounded swelling situated slightly above the middle of the right thigh, on the inner side, in the line of the femoral artery. The outline of the swelling is fairly well defined; it is of very firm consistency, not very movable, no fluctuation, and the skin over it is no way involved. On palpating the tumour it is found to have a distinctly expansile impulse. Pressure applied to the femoral artery above the tumour causes the impulse to cease. There is no pulsation to be felt in the posterior tibial at the ankle. Auscultation over the tumour reveals a loud blowing V. S. systolic murmur.

Personal History.—He had rheumatic fever ten years ago, and syphilis nineteen years ago, but has otherwise enjoyed good health. He has been intemperate in his habits. The present illness began about Christmas week of last year (1900). He first felt slight pain about the middle of the inner side of his thigh and noticed a slight swelling there, which was hard to the touch and painful, and he states that he could feel it beating. The swelling gradually increased in size and became more painful, especially after walking; he thought it was connected with varicose veins.

The treatment adopted on admission, viz., rest in bed, dry diet, and iodides in increasing doses, with the limb elevated and swathed in cotton wool, was continued under the supervision of my colleague, the late Dr Black, until 12th February, during my absence from hospital.

The condition of the tumour on 25th January 1901 was

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noted as follows:—The limb is very much swollen from the knee downwards, and the character of the original swelling is also changed, and it is much more diffuse, and has a hard, board-like feel, and the expansile impulse is scarcely perceptible. The skin over the tumour is glossy and discoloured, and it presents a dusky appearance. The patient complains of very severe pain, spasmodic in character, shooting down the leg, and requiring hypodermic injections of morphia for its relief. Sensation in the limb is almost completely gone, from the knee downwards.

On my return to duty in the second week of February, the diameter of the thigh over the tumour was 21½ inches, as compared with 17 inches at corresponding part of the opposite thigh. After consultation with the staff, operation was decided upon at the urgent request of the patient. The operation was performed on 16th February, as follows:—An incision was first made, commencing above Poupart's ligament, and the common femoral was exposed; around this was passed loosely a provisional silk ligature, clipped by a pair of Kocher's forceps, and given to an assistant to hold, with instructions to raise if hæmorrhage should occur. A second incision was then made over Hunter's canal, at the junction of lower and middle third of the thigh, continued till the sartorius muscle was brought into view, and deepened till the roof of the canal was exposed and opened. The artery and vein were adherent to one another at this point, and I passed a provisional ligature round both. I next connected the two incisions, and pulling the sartorius to the inner side, saw that the sac consisted principally of the muscles of the thigh, with the true sac lying spread out posteriorly. I now tied a strong catgut ligature at the healthiest part of the artery, about 2 inches above the aneurysm, and another about the same distance below. After separating I lifted the diseased portion of vessel bodily out with the fingers. There was little or no hæmorrhage, but a slight discharge at the lowest point of detritus and sanious pus. The part removed consisted of a large mass of dark, tarry, compressed clot, but not laminated, the size of a fœtal head. The cavity was washed out with saline solution, and it was estimated that it held two pints. The incision was closed with silkworm gut sutures, above and below, and packed in the

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centre with sterile gauze. The gauze was removed on the third day and the cavity was repacked. From 14th February until 14th March the wound was dressed daily, as above described. This daily dressing was necessary on account of the wound having become gangrenous, and large sloughs of muscle and fascia came away. At this stage a 3 per cent. solution of peroxide of hydrogen in normal saline solution was used to irrigate the cavity, and the peroxide had an instantaneous effect as a deodorant; the sloughs also seemed to separate much more rapidly after we began to use it. On separation of the sloughs the limb was strapped with sterile gauze and the cavity obliterated; union of the edges was rapid and complete. He suffered very severely from shock for the first twenty-four hours after the operation.

The ligature over the common femoral was allowed to remain for 48 hours and then removed. The incision measured 17¾ inches in extent.

His weight was greatly improved and, as there is still a partial loss of sensation of the leg and some slight difficulty in walking, he is being kept in hospital, where he is improving under massage and electricity.

REFERENCES.

Dr D. A. Knox, *Glas. Pathol. and Clinical Transactions*, tied above and below and allowed to granulate.
Maylard, *Glas. Pathol. and Clinical Transactions*, extirpation of radial.
Dr C. K. Briddon, "Annals of Surgery," vol. i.

II. Penetrating Bullet Wound of Brain: Removal and Recovery.

R. M'C., aged 15 years, was admitted to the Greenock Infirmary, on 24th September 1900, suffering from the effects of a bullet wound of the brain, having been accidentally shot by a companion who was playing with a toy pistol.

My colleague, the late Dr Black, saw him at the time of the accident and noted "convulsive twitching of right side of the face."

The following note was taken of his condition by the

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House Surgeon on his admission :—" The patient was admitted about 4.45 P.M. in a condition of almost complete unconsciousness. He responded to vigorous stimulation, but was unable to answer questions or comply with requests made to him. His colour was good. His respirations were regular but sighing. His pulse full and regular. Pupils equal and normal, react to light. Right conjunctiva was insensitive, while the left was sensitive to touch. There was paralysis of the right side, especially marked in the face and arm. The paralysis of leg was less marked and the plantar reflex was present, though diminished. He vomited copiously shortly after admission. Examination showed a small wound of the left frontal bone, situated 1⅝ inch above the line drawn through the supra-orbital margin, and ⅞ inch to the left of the middle line of the head. The wound was circular and about ⅛ inch in diameter, surrounded by slight bruising. On probing the wound the bullet was found to have penetrated the skull and entered the brain. The probe passed backwards, downwards and outwards."

I saw him at 7.30 P.M. The paralysis of the leg was now complete, with absence of the plantar reflex. There was also now complete right-sided paralysis, the patient quite unconscious. Pulse 76, irregular and intermittent.

A sterilized probe, by its own weight, passed its whole length into the track of the bullet. An X-ray photograph was taken in two positions—antero-posteriorly and laterally—and the position of the bullet localised.

After the head being particularly prepared, he was operated upon at 10 P.M. Chloroform was the anæsthetic given. A large horse-shoe incision was made in upper and posterior parietal regions and the flaps reflected downwards. A trephine opening was made in the parietal bone behind the Rolandic fissure, and coinciding with the probable direction of the bullet.

Neither hæmatoma nor bullet being found after opening the dura, another trephine opening was made farther back, and the two openings connected by sawing the bridge of bone, using the " Gigli " saw.

Inserting my finger in the latter opening and sweeping the occipital bone with it, I got the bullet between the membranes

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and the brain. The dura was replaced, and the part kept moist with warm saline solution. I next followed the track that the bullet had made with a long probe, bringing it out through the occipital bone by a small trephine opening, having first attached a thread to the eye of the probe and connected it with a No. 8 Jacques sterilized catheter, in which openings were cut similar to a drainage tube. This passed from the frontal opening, through the whole length of the brain, and emerged at the small opening just described. The discs of bone were replaced and a drain put in the flap, the wound being dressed with sterile gauze and sterile wood wool pad.

He passed a good night, sleeping quietly—no sickness. At 6 A.M., temp. 99; respiration, 24

During the following day (the 25th) he had hiccough and could not swallow, and recourse was had to rectal feeding, only necessary for this and the succeeding day.

On the 27th he was able to drink some milk; subsequently being fed upon milk, beef-tea, chicken soup, and Brand's essence. From 27th September till 1st October he continued gradually improving and gaining strength. On 2nd October he could protrude his tongue when asked, and the next day he asked for a biscuit. On 5th and 6th October his pulse was 47, very slow and weak, temperature normal. Hypodermics of strychnine were given, and ½ oz. of whisky every three hours. He continued taking nourishment well. The whisky was stopped on the 6th, and on the 8th he was stronger and brighter, and asked for a book with pictures. *Black and White* was given him, and he was able to turn the pages himself with his left hand. From this date onwards, his intelligence gradually improved and returned.

On 28th September—fourth day since accident—there was movement of the right leg, when touched, and on 8th October he could move his arms. Improvement was now continuous and progressive, and on November 4th he was able to write his name with his right hand; and on November 16th he carried a pail of water the whole length of the ward. It is to be noted that the power of the limbs recovered quicker than speech.

On 26th September—second day after operation—six

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inches of the drainage tube were cut off, and the remaining three inches removed on the 29th—the drain beneath the flaps having been removed the previous day.

The replaced bone discs held, and the wound healed by primary union, with the exception of a small point at the apex of the incision, which healed by granulation. The highest temperature recorded was 100° F. at 10 P.M., the night following the operation; for the greater part of the time it was sub-normal.

The patient was kept in hospital until 10th January 1901.

III. Modified Kraske Operation for Malignant Disease of the Rectum, without a Preliminary Colotomy.

C. D., aged 31, engine-fitter, was admitted to the Greenock Infirmary on November 26th, 1900, complaining of difficulty of defæcation.

Six months ago he noticed that he was having an occasional attack of pain of a sharp, shooting nature, in the neighbourhood of the anus, and he also referred to the rectum. These pains would last for a few minutes, and then pass off, and he would feel relieved. The pains invariably came on when he was standing, and left him when he lay or sat down. At this time he became aware that he had difficulty in getting his bowels moved when he went to stool, and occasionally at those times, but not invariably, he experienced an aggravation of the pains when the fæces were passing the anus, and always had immediate relief when the motion was passed.

Previous to six months ago he was inclined to be constipated, but did not think unusually so. The motions, from being of a natural character during the last six months, have gradually assumed a ribbon-like appearance. He has also been greatly troubled with flatulence, which pained him somewhat across the abdomen, but on breaking wind was relieved. Sometimes, on passing wind, a slight watery discharge would come away.

Patient states he has always been a healthy man, except for an illness he had in Australia, six years ago, which his medical attendant told him was enlargement of the liver. Nine years

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ago he had gonorrhœa, with paraphimosis, for which he underwent treatment and was cured in about four weeks. He cannot recollect that his hair fell out at that time or that he suffered from sore throat. For the last three or four years he has been very intemperate.

Examination.—Patient is well built and well nourished; his back, especially between his shoulders, is covered with acne spots and numerous small, white cicatrices, probably the remains of previous acne. Nothing abnormal can be made out in the internal organs by physical examination.

Rectal Examination.—On examination per rectum a hard, tuberculated mass could be felt, attached to and encircling the inner wall of the rectum about one and a half inches from the anus. The finger can be passed beyond the growth for about an inch. There was no blood on the examining finger, when withdrawn, and the patient states he is not aware that he ever passed blood per rectum since he became cognisant of his present condition.

On December 19th chloroform was administered, and the condition of the growth examined more particularly. No affected glands could be felt, and the above report corroborated. A wedge of the growth was removed and submitted to Dr Leslie Buchanan; subjoined is his report:—"Growth is a cylinder-celled epithelioma of probably moderately slow growth, owing to the development of much fibrous tissue between the epithelial masses." Operation was performed on December 30th, as follows:—

1. An incision to the left of middle line from the tip of the coccyx.
2. Freeing of the integuments, etc., from the sacrum.
3. Removal of coccyx and lower two pieces of the sacrum with the chisel and a pair of scissors curved on the flat.
4. Hæmorrhage was very free, and gave some trouble in arresting it. This is undoubtedly a very important part of the operation.
5. Freeing of bowel by fingers, preservation of the levator and muscle and section of nearly two inches of the bowel with end to end suture.

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6. Wound packed with sterile gauze, external wound closed at upper and lower end only. The wound was allowed to heal by granulation, being dressed daily with sterile gauze packing.
7. No preliminary colostomy was performed.

Analysis of Treatment.—Patient was very much collapsed after the operation, and until January 4th complained of abdominal pain, with vomiting, restlessness, and occasional hiccough. Morphia hypodermically required to be given.

The highest temperature at this period was 101·4°, and the average 100° in the twenty-four hours. An attack of bronchitis until the 14th January was the only complication.

Gradually those symptoms subsided, the bowels moved on 3rd January, through the wound—the stitches having given way. The wound was douched twice daily with hot saline solution, remained free from suppuration and packed with sterile gauze. He was taught how to wash the parts with an enema in the morning and so ensure movement of the bowels, cleanliness, and cover all with a pad.

Dismissed, well, on April 3rd, 1901.

REPEATED ECTOPIC PREGNANCY IN THE SAME PATIENT [1]

By J. A. C. KYNOCH, M.B., F.R.C.P.Ed.,
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THE occurrence of repeated ectopic pregnancy in the same patient is by no means so rare as was formerly supposed. Varnier finds that in 177 cases of ectopic gestation treated by operation there were seventeen subsequent pregnancies. Four of those were extra uterine, thus giving the proportion of one ectopic to four normal pregnancies. He even reports a case where ectopic gestation was supposed to have occurred three times in the same patient. Haig Ferguson, from a collection and study of published cases, states that "In every hundred cases of extra uterine pregnancy we should expect to find practically five examples of both tubes being involved at the same time, or having been involved at intervals more or less pro-

[1] Read before the Forfarshire Medical Association, Dec. 5th, 1901.

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longed." The recurrence of the condition may take place in the same tube, as in the cases reported by Taylor and Coe. The latter found in the same tube a fresh three months' fœtus, along with a lithopœdion, representing the pregnancy which had occurred two years previously. In all the other reported cases recurrence took place in the opposite tube. Dührssen operated on an incomplete tubal abortion occurring on both sides within an interval of twenty months. Tait reported a case of tubal pregnancy operated on at the third month followed by a normal pregnancy, and still later by an interstitial gestation on the opposite side. In Haig Ferguson's case the first tubal pregnancy, which corresponded to four months, was not treated by operation and terminated in the formation of a lithopœdion. Four years later a three months' ectopic pregnancy occurred in the opposite tube, both appendages being successfully removed at one operation. Mackenrodt reports the case of a patient, 32 years of age, who refused operation, having all the symptoms of ectopic pregnancy on the right side. Similar symptoms appeared eighteen months later, pointing to a left-sided tubal pregnancy. This, along with the right tube, was removed by operation, and in the latter fœtal bones were found. Edgar publishes a case where rupture of both pregnant tubes took place at the seventh and eighth week, both being successfully removed at one operation.

The following case is an example of repeated ectopic gestation, although the diagnosis of the first pregnancy rested on clinical grounds.

Mrs C., æt. 30, was admitted to the Dundee Infirmary on the 19th January 1900, complaining of pain in the left iliac region of one month's duration. Married fourteen years; six children, three of whom are now alive. Her first two children were still-born; the third died of pneumonia. Menstruation was always regular and unassociated with any special discomfort. The last menstrual period occurred ten weeks before admission; six weeks later she complained of the sudden severe pain above noted, accompanied by irregular hæmorrhagic uterine discharge. The pain was aggravated by movement of the bowels. On examination the temperature was 98·4; pulse, 102; urine normal; abdomen soft; great pain complained of on palpation of the lower left quadrant, where an ill-defined

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resistance could be felt. The uterus was somewhat fixed and to the right side, and there was felt a swelling in the left fornix. Under chloroform this swelling was found to correspond in size to an orange; it appeared to be in the broad ligament and close to the uterus. There was also felt a smaller swelling behind the uterus, which was regarded as a prolapsed ovary, and probably the cause of the pain complained of on movement of the bowels.

The condition was diagnosed as a hæmatoma in the left broad ligament, the result of a ruptured six weeks' left tubal pregnancy. It was decided to allow absorption to take place rather than treat the case by operation. After seven weeks' rest in bed, a slight thickening felt through the left fornix was all that remained to represent the previous condition. The patient left the hospital well ten weeks after admission.

She continued to enjoy perfectly good health, menstruation being regular during the subsequent eighteen months. On the 5th September 1901 she was readmitted, complaining of pain in the right iliac region of five weeks' duration. She had gone one week past the expected menstrual period when the pain began, and it was followed by a continuous hæmorrhagic discharge. She gave a history of having passed two large pieces of membrane with the discharge a few days after the onset of the pain. This was followed by relief of the pain for two days, but it recurred from time to time till her readmission to hospital. Under chloroform the uterus was found to the front, movable, slightly enlarged. There was no undue pulsation of the uterine vessels, and both lateral fornices appeared to be free of any swelling. Posteriorly and to the right of the uterus there was felt a fixed tender swelling about as thick as the forefinger. On rectal examination this swelling felt rather like an inflammatory thickening of the utero sacral ligament, and for this reason it was decided to postpone operative interference. She was kept in bed for six weeks, during which period she had intermittent attacks of pelvic pain, accompanied with irregular hæmorrhagic uterine discharge. There being no diminution in the size of the swelling, the condition was regarded as tubal gestation, and operation decided on.

Abdominal Section.—On October 5th, the right Fallopian

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tube was found adherent, and distended to the thickness of the thumb. It was brought up to the incision, and, along with the corresponding ovary, was removed in the usual way. The left appendages were adherent, and the upper part of the broad ligament slightly thickened. The left tube and ovary were not removed. The patient made a satisfactory recovery, and was discharged on the 19th November. On examination of the removed tube, it was found enlarged to the size of the thumb. On opening it a sac was exposed, from which there escaped blood-tinged fluid. On floating the opened tube in water numerous fine branching villi were observed.

Professor Sutherland kindly examined the tube microscopically, and verified this observation, as well as the presence of somewhat small decidual cells.

The interpretation of this case would appear to be a six weeks' ectopic gestation in the left tube, rupturing into the corresponding broad ligament, forming a hæmatoma, which became absorbed in the course of six weeks ; eighteen months' subsequent good health, and a recurrent ectopic pregnancy in the right Fallopian tube.

On account of the possibility of such an accident recurring in the same patient, some recommend that the opposite tube should be removed in all cases at the first operation. As this may mean the production of sterility in a comparatively young patient, and as so many cases of normal pregnancy have been reported after the unilateral operation, such radical treatment should be confined to cases where there is an obvious pathological condition of the tube present.

THE SURGICAL TREATMENT OF SCIATICA[1]

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I TAKE the liberty of bringing this subject before the Association, not because I can, from my experience of it, which I shall later give you, speak with emphasis on its efficacy, nor have I any cases of cure to report, but because I consider it is a form of treatment of this variously treated complaint which must

[1] Read at Meeting of Forfarshire Medical Association, Dec. 1901.

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be beneficial or not; and if beneficial, it should be adopted more frequently than is usually the case.

When you find a modern up-to-date text-book on surgery, such as that of Rose & Carless, saying that "Stretching of the sciatic nerve may be required for (1) neuralgia of intractable type; (2) paralysis or spasm of muscles supplied by it owing to adhesions contracted between it and surrounding parts, the result of injury, cellulitis or perineuritis; (3) in paralysis or spasms due to some forms of tabes," one naturally has some misgivings as to putting forward any views in favour of stretching the sciatic nerve early in cases of sciatica pure and simple.

Medical text-books state that the results are uncertain.

In the third edition, 1899, of Gowers' "Diseases of the Nervous System," it is said that "nerve-stretching has ceased to be the fashion it was a few years ago, a proof of its limited power."

I have searched in vain amongst English writers for a definite statement on the benefits of this treatment. There are in Continental, American and British journals, numerous reports of cases which have been cured by certain applications, in which the writers seem to have satisfied themselves that they have at last found a remedy, each one having discovered a different one.

The long list of remedies suggested confounds one. Internal administrations, external applications, hypodermic injections, electrical applications, massage and the long splint or plaster of Paris bandages.

I would fain hope and believe that had nerve-stretching been adopted more frequently and earlier, this list would be shortened.

Of course I refer to what Gowers calls primary sciatica, *i.e.* painful affections of the nerve and nerve alone, caused usually by exposure to cold. In a long article on sciatica, published in 1868 (1), an attempt was made to impress the medical faculty with the belief that the best form of treatment was the hypodermic injection of morphia over the nerve. The writer injected one-sixth of a grain twice a week or daily, and some cases he cured in ten days; others took months, but they were eventually cured. We are not told how long they remained so. We would surely not now dare to adopt this form of treatment.

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I have injected it in one case without permanent improvement, probably because it was not done often enough.

In 1872 Billroth exposed and examined the sciatic nerve with disappearance of the pain after operation.

Trousseau mentions in his book on Clinical Medicine, that some cases of sciatica had been benefited by incision over the nerve, and the insertion of plugs of cotton wool to keep the lips of the wound apart.

It was in 1872 that the operation of nerve-stretching was first performed by a Continental surgeon, Nussbaum (2).

Callender (3) of St Bartholomew's Hospital was the first to do it in this country in 1875. The case was one of neuralgia of the median nerve following amputation through the wrist-joint for injury. Amputations higher up, hypodermic injections of morphia, etc., had been tried without success. Nerve-stretching was successful.

Callender (4), in his report of this case and remarks, recommended this treatment in sciatica. It was then not only done in sciatica, but from its success in these cases it was carried out in cases of tetanus, epilepsy, locomotor ataxia, etc., and more recently in perforating ulcers of the foot, with some success.

The natural result was that it was not found successful in a number of cases and lost favour because it had been used in unsuitable cases and therefore abused. It does not appear to be regaining its former position. In the Royal Infirmary, Edinburgh, from 1892 to 1896 out of 154 cases of neuralgia 45 were treated by nerve-stretching.

In St Bartholomew's Hospital from 1896-99, inclusive, nerve-stretching was done in 9 cases of which only one was a case of sciatica.

In our own Infirmary from 1890 to 1900 there were 258 cases of neuralgia (in which sciatica is included as before) and nerve-stretching was done in only 7 cases, of which 2 at least were in the upper extremity.

Very little has been written about the bloodless method of stretching the sciatic nerve, which should in my opinion be always done under an anæsthetic, because if you are unable to do the operation sharp enough so as to stretch

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the nerve completely you render the condition worse than before.

There must be some uncertainty as to the results of nerve-stretching which militates against the operation, and some diffidence on the part of the practitioner to recommend a surgical operation when there is yet another remedy which may be tried.

Callender in 1875 pointed out that no bad effects were likely to follow from nerve-stretching, but Bowlby in his book mentions that 13 cases of death have been reported after stretching of the sciatic nerve directly due to injury to the spinal cord.

There are dangers in this as in all operations, but the dangers can be minimised by care. How is the relief from pain, which does result, to be explained? Callender suggested that the relief might be due to separation of adhesions, but thought it more probably due to a numbness of the nerve being caused. "The transit of abnormal impressions conveyed along the fibres of the nerve is thus broken and in the interval thus gained the centres reassume their normal control."

Gowers says the same:—"Sometimes perhaps by releasing the nerves from compressing adhesions, but probably more often by effecting an energetic counter-irritation and enforcing a beneficial rest."

Various observers who have examined nerves after they have been stretched have agreed that there is degeneration followed by regeneration, but do not agree absolutely as to which part of the nerve undergoes this change. There must be rupture of blood-vessels, ecchymosis and consequent cell proliferation as the result of excessive stimulation.

This numbness I have found existed in all of my cases the day after operation and always at the periphery, where one author says the degenerative changes are most marked, but the rest thus caused does not sufficiently explain the relief. Some damage to the inflamed nerve must result from the mechanical effect of stretching. There is no doubt that the separation of adhesions, between the nerve and the soft parts, plays an important part in the relief of sciatica, and where they are well marked their excision may be advisable as Renton (5) pointed out in a report published in 1897 of four cases thus treated

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with marked success. It is a good thing to pass the finger up and down the nerve as far as possible to separate the adhesions before stretching the nerve.

It is advisable to pull down as well as up, for many cases begin with lumbar pain, which passes to the buttock and down the thigh. The traction on the proximal end should never be made with the intention of pulling on the cord. Professor Symington (6) in 1882 published the results of some experiments which he had made and showed that the cord was only pulled on after sufficient traction had been made to rupture the dura mater. It is not necessary to pull on the cord to effect relief from pain.

The cases which have induced me to take up this subject, and which I have treated by nerve-stretching, are the following :—

1. J. S., aged 38, seaman, was seen by me in August 1895 for severe pain in lumbar region and right buttock and thigh posteriorly. The treatment by anti-neuralgic medicines, counter-irritants, blisters, dry-cupping and hypodermic injections of morphia, failed to bring permanent relief. Bloodless nerve-stretching without an anæsthetic was tried, but his resistance was too great and the attempt failed.

In November he was sent to the infirmary and was admitted to the medical ward and thus passed out of my care.

2. J. A., aged 54, ploughman, admitted to the surgical side of the Royal Infirmary on 19th June 1899, for right-sided sciatica. Duration five years. Had pain on pressure over the right sciatic nerve ; at a distance of six inches above the upper border of the patella the right thigh was two inches less in circumference than the left thigh at similar position. Was in Infirmary four weeks ago, when he had needles put in and left in thigh for twenty minutes, with temporary relief.

21*st June*.—Under chloroform. Right sciatic nerve was cut down upon, hooked up by the finger, and stretched. The nerve was pulled upon its proximal and distal portions, the wound was washed out, sutured and dressed.

24*th June*.—Pain gone. There was a slight trouble with the wound, but he left on the 8th July quite free from pain. Has not been heard of since.

3. A. R., aged 35, baker, was admitted to Royal In-

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firmary in August 1900, to have his left sciatic nerve stretched for persistent pain in the left hip and leg. Duration four months. Pain was first noticed after sleeping in a chair for some time. Had been treated by injections subcutaneously, iodine liniment, blisters, etc., with only temporary relief. Pain in back of left hip easier when knee is flexed.

August 28.—Nerve stretched through incision under chloroform, and treated as in Case 2. The wound in this case, too, gave some trouble. The pain disappeared and did not return.

September 8th, 1900.—Sent home, wound quite superficial. On enquiry in October this year at his medical attendant, I was informed that A. R. had had no trouble since, and had said that the operation had been successful.

4. R. M., aged 33, admitted to the medical ward of the Royal Infirmary in January 1899. Complaint, pain in back and down right thigh and leg. Duration eight years. Pain had been constant for eighteen months down back of right thigh and across the loins. Previous treatment, amongst other means, blistering and acupuncture (twice). The needles were inserted eight days previous to admission. Not an abstainer.

Condition on admission.—Pain in left leg; tenderness on pressure over the line of the right sciatic nerve; circumference of the thigh at two inches and five inches above the upper patellar edge, one inch less on the right side. Was transferred to the surgical side, and on January 27th the right sciatic nerve was stretched, adhesions separated as far as possible. The sheath of the nerve was opened in addition, and some of the nerve fibres separated (5). Wound treated as in Case 2.

February 5.—Wound dressed. Still has pain in limb at back of right knee and in right calf. Has not yet got back movement of his toes.

February 13.—Complains of pain coming on at 11 P.M. and continuing till 2 A.M. Still has pain in right foot. Cannot use extensors of the ankle. No difference in measurement of calves.

February 15.—Examined under chloroform by Mr Greig, who, after a holiday, had taken charge. Examination of abdomen and per rectum revealed nothing. Thigh was then flexed forcibly on abdomen with knee extended.

February 15.—Slept little on account of pain.

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February 18.—2-99.—Home, with no improvement in paralysis.

May 27.—Called at my house to show himself. He shows weakness in the right foot. In walking, drops his toes and then puts down his heel. Has no pain. Had tingling and tightness across foot for some time after operation. Weakness getting better. Has not reported himself since.

5. W. M., aged 32, carter, admitted to the Royal Infirmary August 13, 1901. Complaint, pain in back of right thigh and leg. Duration three months. A strong, healthy-looking man limping on account of pain, never off work longer than three days previous to present complaint. Treatment, rest for a few days. Went to doctor a week ago and received prescription which he has taken without improvement.

August 20. Right sciatic stretched under chloroform, as in Cases 2 and 3. Wound sutured and dressed as in others.

August 22.—No pain anywhere. Some numbness at ankles.

August 29.—Wound healed.

August 31.—Left for home.

December 1.—Seen by me. He said he had been quite free of pain in back and right leg from three weeks after the operation. Still had some pain on outer side of ankle which he ascribed to an injury he had received to that ankle some years before.

December 20th.—Seen at his work, evidently quite free of pain.

6. W. M., aged 17, admitted to Parochial Hospital the 26th January 1899. Complaint, pains in lumbar region in the left hip running down the leg to the knee and ankle. Duration three months.

Condition on admission.—Spasmodic pain in left hip and leg as above, movement at hip quite free, tenderness on pressure between great trochanter and tuber ischii. Otherwise a healthy boy though badly developed.

February.—Nerve stretched as in others. No pain from the day after the operation. Further history not known.

I am indebted to Dr J. M. Whyte for the request to operate on this case.

It is not possible to come to an unassailable conclusion from

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such a small number of cases. It is, however, worthy of note that in the five cases in which the nerve was stretched there was relief from pain almost immediately after the operation.

Relief from pain is known to have continued for four months in two cases and thirteen months in one. In one of these it had existed for eight years previous. In one where no subsequent history has been obtained, relief followed the operation although sciatica had existed for five years previous.

From the paralysis which followed opening the sheath of the nerve and an attempt to separate the nerve-fibres (7), I would not consider it wise to do more than stretch the nerve and would open the sheath only if there were much effusion.

My conviction from the relief after nerve-stretching which results in even long-standing cases, is that this treatment ought to be adopted sooner. Many of these long cases, treated with numerous drugs and external applications, would benefit more from prolonged rest, but many cannot carry this out.

Provided the cases are limited and well defined, having no other pains and no other organic condition in pelvis or elsewhere, nerve-stretching is beneficial and should be recommended early.

Should the pain recur after operation in the limb below the knee, I would recommend further nerve-stretching lower down.

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ADRENALIN—THE ACTIVE PRINCIPLE OF THE SUPRARENAL GLAND

An Address delivered before a Meeting of Medical Men at the School of Medicine, Minto House, Edinburgh on Tuesday, December 3rd, 1901

By D JOKICHI TAKAMINE, F.C.S.,
Master and Doctor of Tech., Tokio University

MR T. MABEN, F.C.S., who presided, introduced Dr Takamine as one of the first fruits of the Japanese renaissance. He came to this country with eleven other Students some twenty years ago, and whilst in the Andersonian College, Glasgow, he commenced the study of the mycelial ferments, which ultimately resulted in the discovery of the amylolitic substance known as Taka-Diastase.

About two years ago he took up the investigation of the suprarenal gland, and he had been the first to isolate the active principle of that organ in a pure, stable, crystalline condition. He had been asked to explain the chemistry and therapeutics of this principle, and also to give a demonstration of the value of Taka-Diastase.

Dr Takamine said:—

Gentlemen,—This occasion brings me back to the time when I was a student twenty years ago in this country, and I feel as though I am reporting the result of my work before my old professors. Whatever little original work I may have done is the fruit of teaching that your countrymen gave me; and that does not apply to myself alone, for the whole progress made by Japan within the last thirty years can be largely attributed to the friendly suggestions and education given by this country.

It will be very interesting to you to note that the introduction of modern civilisation into Japan is largely attributed to British medical science and practice. You are aware that most of the opening up of Asiatic countries was done at the point of the sword or by guns; yet you will observe that in such cases the introduction of modern civilisation is only superficial. Christian missionaries are working hard, yet with little success.

In the case of Japan, medical science did the work, and the civilisation introduced is not skin deep but is from the heart of the people. It was indeed medicine that brought modern civilisation successfully into Japan, and not either Christianity or the point of the Armstrong gun. The medical men who

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went and settled in Japan from Holland in 1850-60 demonstrated the superiority of modern medicine over that of the Chinese Medical School, and it did not take very long before Japanese physicians appreciated the importance of studying such advanced art, discarding their old system. A handful of disciples of Dutch physicians scattered themselves into different parts of the country, and they were soon overwhelmed with patients and pupils.

Before many years elapsed private medical institutions called Jiku were scattered all over the country, whilst the central government of Japan was still hesitating to open commercial relations with foreign powers; in fact, it was a criminal offence to do business with foreign nations. One who tried to go abroad had to risk his head; yet, in the midst of such anti-foreign feeling, all over the country medical science and practice made steady progress.

When the Shogun Government was forced to make a commercial treaty with foreign powers, and soon after when the present emperor resumed power, the demand for persons who had knowledge of foreign languages, arts, etc., was suddenly increased. The supply to the demand came from medical men and their pupils. Bright, capable young men were selected, irrespective of their hereditary rank, and it can be statistically proved that out of a dozen or more different sets of Cabinet Ministers who supported the Imperial Government, 40 to 60 per cent. of them were either medical men, or some derivative of medical men. I may mention that the Marquis Ito, "Maker of New Japan," now visiting Europe, is one of the medical derivation; Count Okuma is another, and so dozens and dozens can be traced back to medical men; thus it is statistically correct to state that the progress of modern Japan can be attributed to medical science.

It is my strong opinion that if you want to introduce modern civilisation into any of the Asiatic countries, send a lot of medical men. Christianity and everything else will follow according to its own merit, and China is no exception to the rule; and, that if the amount of money expended in missionaries were utilised in sending medical men, the progress of China would be ten times quicker, and without loss of blood or powder.

My grandfather was a medical man practising after the Chinese school, and when his son was of age he saw the superiority of the modern system and sent him over to study under the Dutch school. My father appreciated the difficulty of their language, and found the necessity of starting the study of foreign languages earlier; thus he sent me early to Nagasaki

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where the foreign settlement was, with a view to studying medicine eventually.

After graduating in the University of Japan, I was sent to Britain to complete my study. My old professors infused into me the nucleus of some originality. Appreciating the kindness of my teachers I will endeavour to tell you a couple of the results of my original investigations. One was in the direction of the utilisation of microscopical objects.

As you are aware there are two kinds of microbes, useful and injurious. Most of the microbes that we deal with now-a-days are our enemies. They are mostly of a pathological nature: we fight them, and place ourselves in negative and passive conditions. It is true that the study of such pathological germs is very important, and a great many valuable results have been accomplished. I have, however, devoted my attention to microscopical creatures which are useful to us, and which we may advantageously utilise. The last issue of the *Medical Press* contained an article entitled "An Apology for Bacteria," which rightly says that we cannot exist without bacteria.

I am pleased to announce that the result of my investigation was a practical success, and was so in the way of producing a diastasic substance by the microscopical plant.

A kind of fungus called Eurotum Oryzae has a power of secreting diastasic enzyme during its growth. The oldest diastasic substance we know is, of course, the ptyalin of saliva. In old and savage states it was utilised in the production of an alcoholic beverage from cereals.

As civilisation advanced, such a source of diastasic supply became impracticable, hence the necessity of finding some other sources of diastasic substance.

The first step for the production of an alcoholic beverage from grain is to convert the starch of the grain into sugars by diastase, and then into alcohol by yeast. For this purpose the germination of the grain, usually barley, has been utilised all over European countries. In Japan, however, a growth of a certain fungus has been utilised for similar purposes. I have improved that process, and have eventually succeeded in isolating the diastasic enzyme in a practically pure form—such product is known under the name of Taka-Diastase—now extensively used for amylaceous dyspepsia. The process of making this diastase is very simple, and it is as follows:—The bran of wheat is well sterilized by steam; on to that, spores of such fungus are sprinkled, and are allowed to grow in an incubator, at a proper temperature and humidity. In the course of forty-eight hours the bran will be covered with a dense growth of this microscopical plant, and the mass will be found to be rich in

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diastase, from which it is extracted by percolation with water. The diastase dissolved is now precipitated by the addition of strong alcohol, thus separating it from other impurities that may exist in the extract. The precipitate is now pressed and dried and constitutes Taka-Diastase. It has the remarkable diastasic power of converting a hundred times its own weight of starch in ten minutes, at a proper temperature and condition.

Two-thirds, at least, of our daily food consists of starchy food, and more than two-thirds of the cases of indigestion are due to the imperfect digestion of starchy food that we eat, which remains unchanged by the ptyalin of saliva; hence it is plain that the diastasic enzyme becomes very important in the majority of cases of dyspepsia. The pepsin-creating organs we possess are comparatively well protected in the system, while the salivary glands are more exposed to abuse and misuse. Taka-Diastase will be found very useful in supplying the deficiency of ptyalin. The characteristic property of Taka-Diastase is its remarkable starch liquifying power, and also its stability. Most of the diastasic preparations thus far manufactured from other sources are unstable, and physicians can not depend upon their efficiency.

It has been common teaching in the text-books of physiology that the digestion of starchy food by saliva can occur in the stomach only for a period of ten or twenty minutes after eating, as it was supposed that the ptyalin would be destroyed by the hydrochloric acid secreted, hence very little importance was laid upon the salival digestion. But of late years it has been practically demonstrated beyond all doubt that salivary digestion goes on in the stomach for a period of one to two hours after eating. The stomach is kept practically neutral, owing to the fact that the hydrochloric acid combines with the albuminous part of the food just as fast as it is generated, rendering the contents of the stomach neutral. This is a very important point, and most of the text-books in future ought so to be revised.

I was once congratulating myself on the fact that I was the first one who had succeeded in isolating a stable diastase, when a friend of mine told me a tale of discovery of a more wonderful digestive ferment than Taka-Diastase, and it might interest you to hear of its discovery.

Once upon a time there was a botanist who one day went into a mountain in search of new plants, when he suddenly observed in the distance an enormous serpent looking at a poor farmer. At the next instant the botanist found that the serpent swallowed the man, naturally causing a big bump in its digestive canal. While he was wondering what the

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serpent was going to do, he observed that it crawled along and ate a few leaves of a certain plant. In the course of a few minutes, to his astonishment, the large lump began to disappear very rapidly, and in a very short time the serpent ran away without apparent discomfort. The idea struck the botanist at once that the plant must possess wonderful digestive power, hence he congratulated himself on such a discovery, and filled his pockets with the plant, and started home. On his way home he became hungry, and stopped at the roadside tea-house, where rice cakes were on sale. While he was eating the cake he got into conversation with the bystanders, and at last made a wager that he could eat so many rice cakes, which was really impossible for an ordinary person to eat. The botanist kept on eating, and when he was nearly brim full he thought that it was time to utilise his newly-discovered, wonderful digestive plant. To the astonishment of the bystanders, a few minutes after the botanist ate the plant, there was found on the seat a big pile of rice cakes where the botanist had been sitting, and the man himself was thoroughly digested. It was evident that this plant was to digest human beings, and had no action whatever on starchy food.

The next subject I wish to draw your attention to is my study of the active principle of *the suprarenal gland.*

Since Addison, over forty-five years ago, observed the change that took place in the suprarenal gland, and its relationship to a disease which bears his name, Schäfer and Oliver found that the intravenous injection of suprarenal extract caused a rise of blood pressure, and subsequent investigations have established beyond a doubt the marvellous physiological activity, as well as the therapeutic property, possessed by the gland.

The suprarenal gland was either dessicated into a dry powder and used in that form for various treatments, or the aqueous extract of the gland made and prescribed for various forms of disease. The result was very successful in a great many cases, but there were drawbacks in that such dessicated powder and extracts contained a large amount of foreign matter which was prone to decomposition. Hence, such preparations were not stable, and for that reason many of the clinical conclusions drawn from the use of such unstable products were negative and misleading.

Various attempts to isolate the active principle of the gland followed. Many able chemists took the subject up, among them J. J. Abel of Johns Hopkins' University, started the chemical investigation of the gland, and announced in 1898 that he had isolated the active principle and named it Epinephrin. Shortly afterwards Otto v. Fürth of Strassburg published the result of

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his investigation and criticised Abel's Epinephrin, stating that Epinephrin was the impurities mixed with some of the active principle, and Fürth himself claimed the isolation of the active principle, and called it Suprarelin. Notwithstanding these claims there is still room for controversy and doubt, for neither of the authors obtained their product in a sufficiently pure form.

Last summer I commenced my investigation into this interesting subject and am, indeed, pleased to announce that I have succeeded in isolating the active principle in a pure, stable, crystalline form, to which I gave the name of Adrenalin.

Adrenalin is a light, white, micro-crystalline body, showing itself in five or more different forms. It has a slightly bitter taste, and is sparingly soluble in water, but perfectly stable in the dry form. Adrenalin possesses a slightly alkaline reaction, and combines with various acids to form corresponding salts. The Solution of Adrenalin gives a beautiful green colouration with Ferric Chloride, and a red colouration with Iodine. It is a powerful reducing agent, and may be employed in that capacity in various arts and manufactures, such as a developer of photographic plates. It causes no precipitation with an ordinary alkaloidal reagent, showing that it is not an alkaloid in the common sense of the term. Its ultimate analysis gives the empirical formula as $C_{10}H_{15}NO_3$. While a good many able chemists spent years and years in an investigation to find out the process of isolating the active principle, yet when you once discover how to do it, like a good many other instances, the process of making it is very, very simple.

The suprarenal gland of sheep or oxen is disintegrated and extracted with water. Such extract is treated with alcohol to throw down the non-active constituents, both organic and inorganic, and the filtrate is then evaporated in a vacuum to proper consistency and treated with alkaline substances, which process throws down the active principle in a crystalline form, which is afterwards purified by repeating a similar method.

The physiological activity of Adrenalin is something astounding. A fraction of one drop of Solution of Adrenalin, or its salt, in the strengths of 1-50,000, blanches the normal conjunctiva within one minute. It is the strongest hæmostatic agent known. The intravenous injection produces powerful action upon the muscular system in general, but especially upon the muscular walls of the blood vessels and heart, resulting in an enormous rise of blood pressure. The results of various other experiments demonstrate a similar conclusion. Generally speaking, Adrenalin when locally applied is the most powerful astringent and hæmostatic known; also a very strong

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stimulant of the heart. It is non-irritating, non-poisonous, and non-cumulative as far as it has been observed. It is indicated in a condition produced by morphine and opium poisoning. It has produced good results in circulatory failure, in the prevention of collapse of anæsthesia, and allied conditions. It is invaluable in carrying out bloodless operations in nose, ear, eye, and throat work.

The latest incident regarding the suprarenal gland I may mention is a report from my assistant in my New York laboratory, where I am carrying out further investigation on this interesting gland.

He writes under date of November 25th that the expressman sent to my house a box containing over 20 lbs. of suprarenal gland. The man in attendance told the expressman that the doctor had just gone on an extended trip to Japan. The expressman, without further investigation, reported the matter to the Express Company. The Company recognising that the material came by the refrigerator cart packed in ice, and therefore was a perishable article, ordered it to be sold with the purpose that they might be able to obtain due express charges of 70 cents. The gland was sold, and somebody finding it remarkably fresh, cooked it, and made a hearty dinner over it, considering it to be a remarkable bargain. Each ox gives two glands, weighing from 10 to 12 grammes each, so that 20 lbs. represent glands from 400 to 500 oxen.

Those who partook of this suprarenal dinner found themselves so ill that the physician had to be called in. While Adrenalin is perfectly harmless in a moderate degree, I would not recommend you to prescribe a 20 lb. lot in one dose.

In conclusion, I desire to state that the isolation of the active principle of the suprarenal gland not only is remarkable in itself; but, at the same time, it throws a light upon the fact that the wonderful physiological action of the various organs of our system may depend for effect on apparently a simple chemical substance, and such isolation will naturally give a strong impetus for future investigations in search of the active principle of other organs; and, it may be said that, before many decades, we may find that the complicated physiological action of the leading bodies of many animals may be extracts expressed by a simple formula consisting of carbon, hydrogen, oxygen and nitrogen.

Questions having been invited, Dr Logan Turner said he would like to know whether there was any liability to sloughing after operations performed with Adrenalin.

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Dr Takamine said he had only heard of a very few such cases among the many thousands that had been reported.

Dr J. Ritchie asked how long the hæmostatic effect of Adrenalin lasted?

Dr Takamine said this entirely depended upon the strength of the solution used. The duration would be in direct proportion to the strength employed.

Professor T. R. Fraser moved that a hearty vote of thanks be awarded to Dr Takamine for his exceedingly interesting and valuable lecture. He was particularly interested not only in the subject of the lecture, but in the fact that the lecturer was a representative of a rejuvenated Japan—rejuvenated, he might say, in regard to weapons of warfare, as well as in the gentler arts and sciences of civilisation.

Referring to the action of Adrenalin on the heart, he thought that in cases of emergency due to collapse under chloroform, etc., it might be more useful than Digitalis, as it apparently acted with great rapidity, and evidently also the doses could be repeated without cumulative effects.

OBSERVATIONS ON CASES OF PERNICIOUS ANÆMIA, WITH SPECIAL REFERENCE TO THE BLOOD CHANGES

Part of a Thesis presented to the University of Edinburgh

By ALEXANDER GOODALL, M.D., M.R.C.P.E.,
Edinburgh

Continued from page 31

CASE III. A railway porter, aged 47, residing at Cupar Fife, was admitted to the Royal Infirmary under Dr James' charge on 15th February 1899. He complained of pain in the chest, prickling sensations in the legs and fingers, weakness and listlessness of two and a half years' duration.

History.—Family history good. Patient is married and is comfortable at home and is temperate as regards alcohol and tobacco. He has had no previous illnesses of importance. Present illness began over two years ago. Patient began to feel vaguely out of sorts and became gradually weaker, but was able to work till December 1898.

State on Admission.—Patient is well developed. Muscles soft. There is marked pallor with a slight yellow tinge. The sclerotics are very white. Temperature normal.

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Alimentary System.—Lips dry, gums pale, teeth good. Tongue pale and moist, shows a slight coating of fur. The appetite is fair. Bowels regular. Stomach slightly dilated. Liver not enlarged.

Hæmopoietic System.—No unusually enlarged glands. Spleen not enlarged. Red blood corpuscles, 848,000 per c.mm.; white corpuscles, 5,313 per c.mm.; hæmoglobin, 30 per cent. Blood looks pale, and coagulates slowly. Fibrin is diminished. The average size of the red corpuscles is increased. There is marked poikilocytosis. Megalocytes and microcytes are numerous, megaloblasts and normoblasts are present in considerable numbers. Polychromatophilia is not marked.

Circulatory System.—There is a slight dyspnœa. There are no signs of cardiac enlargement. On auscultation, the sounds are feeble in all the areas. There is a soft systolic mitral murmur and a bruit can be heard in the neck. Pulse 72 per minute, regular, wave small, tension low.

Respiratory.—The chest is rather long and rounded. Movements fairly good but vocal fremitus is diminished. The sounds are faint with no accompaniments.

Integumentary System.—The skin is pale yellow in colour. There is slight œdema of the eyelids, legs and ankles.

Urinary System.—The urine is dark amber in colour, acid, sp. gr. 1013. There is a well marked absorption band due to urobilin on spectroscopic examination.

The Nervous System except for "prickly" sensations in the fingers seems healthy.

Treatment and Progress.—For the first fortnight patient was treated with arsenic (Liq. Arsenicalis ℥v t.i.d.) and an injection of Brown-Séquard's bone marrow and spleen juice every third day. At the end of that time, Liq. Ferri Pernitratis in ℥ xx thrice daily was substituted for the latter. During the first four weeks patient improved considerably but occasionally suffered from diarrhœa. On March 18th, he had a rigor and complained of pain in the left side. The temperature rose to 103° F., pulse to 129 and respirations to 49 per minute. The condition evidently was pneumonia limited to the left base. The arsenic and iron were stopped and digitalis and ammonia were administered. Patient had a crisis on the 4th day (March 22nd). The pulse, however, became very poor in volume and tension. On March 28th, as there had been an increase in the dulness, an exploring needle was inserted into the left side and some clear fluid was found. On April 2nd, 44 oz. of fluid were drawn off. The fluid was clear yellow in colour with a few flakes of fibrin. Its specific gravity was 1014. On April 3rd, the temperature rose, loud friction was heard on the left side and a patch of

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catarrhal pneumonia was detected on the right side. There was, however, no marked change in patient's symptoms except that he was gradually getting weaker and more breathless, till April 14th. From that date till the 20th, he suffered greatly from diarrhœa, consequently he was treated with simple astringents and all other medicines were stopped. After this period arsenic was resumed, but fluid was evidently re-accumulating in the left pleura. On May 4th, blood-stained pus was found and 39 oz. were drawn off through a large trocar, and a tube was then inserted between the fifth and sixth ribs. No great improvement followed. Patient got weaker and weaker. On May 7th, the left side was œdematous and the œdema soon spread to the back. On June 8th, patient died after a paroxysm of coughing.

TABLE V.

Date.	Red Cells per c.mm.	White Cells per c.mm.	Hb. %.	Colour Index.
1899				
Feb. 15th	848,000	5,313	30	1·8
„ 20th	1,440,000	6,200	25	·8
Mar. 3rd	2,400,000	8,400	35	·7
„ 10th	3,916,000	7,000	45	·5
„ 18th	2,000,000	5,620	50	1·2
Apr. 20th	2,720,000			

TABLE VI.

Date.	Percentage of White Cells. Polymorphonuclear.	Lymphocytes.	Myelocytes.
April 28th, 1899.	70	20	·2

A *post-mortem* examination was made by Dr Welsh, and the following notes were taken :—

Thorax.—Left pleura healthy along the anterior margin. All the posterior part cut off by fibrous adhesions and containing over 20 ounces of pus. Right pleura healthy.

Heart.—Epicardial fat degenerated and mucoid. Arterial valves competent. Endocardium of left ventricle thick and opaque. Cavities slightly dilated. Muscle flabby and anæmic, with slight fatty degeneration.

Left Lung.—Emphysema along anterior margin. Collapse posteriorly.

Right Lung.—Emphysema and anæmia.

Abdomen.—Peritoneum healthy.

Liver.—Periphery of lobules yellow from fatty infiltration.

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Centres dark red from chronic venous congestion. Marked pigmentation to naked eye. Iron reaction with potassium ferrocyanide and hydrochloric acid at periphery of lobules.

Spleen enlarged, soft, pale and diffluent.

Kidneys somewhat enlarged and pale, showing cloudy swelling and fatty degeneration.

Osseous.—Bone marrow of femur all transformed to red marrow, and the bony trabeculæ were being absorbed around the medullary canal by the increase in bulk of the marrow. The pus showed only a few degenerated cocci of uncertain nature.

The points worth noticing about this case are its insidious onset and apparent causelessness, and the effect of a complication which, in a more healthy person, would have been a comparatively slight illness—an attack of pneumonia which did not affect the whole of the left lower lobe and which was followed by a crisis on the fourth day. This was followed by pleurisy which subsequently became purulent. As patient's condition did not appear to permit a more serious operation, a tube was inserted between the ribs. In a few days the side of the chest was boggy and œdematous. The progress of this case seems to indicate that wounds, whether traumatic or surgical are of very serious import owing to the poor nutrition of the tissues, apart from the danger of hæmorrhage. It may be that the diminished number of leucocytes may result in a lessened resistance to the action of organisms. It is specially unfortunate that some of the data and nearly all the blood films from this case have been accidentally destroyed. A study of the effects of a complication such as pneumonia, which has marked effects on the blood in a case of pernicious anæmia, authenticated by *post-mortem* examination, should otherwise have made Tables 5 and 6 the most interesting of the series.

CASE IV. A girl, aged 21, a silk factory hand, came to the Out-patient Department of Great Yarmouth General Hospital on 19th January 1900. She complained of weakness and sickness and swelling of both wrists. She said the swelling had only come on two days previously, and that the sickness had existed for a week. Her temperature was 101° F., and as she was obviously seriously ill, she was straightway admitted as an in-patient under the care of Mr A. H. Moxon. The notes of her case are as follows:—

History.—Family history good. Her home surroundings are comfortable. Her food is good. Her work is exhausting as she has to stand all day over a machine.

Previous Illness.—Patient does not remember suffering from

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any of the diseases of childhood. She had anæmia for two months at the age of 16, and again for about a month when she was 18.

Present Illness began last Christmas (a month before admission). Patient says she caught cold and got so weak and breathless that she had to give up her work. She has not worked since. She has been treated at home with brandy and beef-tea. About a week ago she began to feel pains in her legs, worst near the ankles, and she also became troubled with headaches and suffered from sickness. She has frequently vomited immediately after meals. Two days before admission the hands and wrists became slightly swollen and painful, and she felt distinctly feverish.

State on Admission.—Patient is well developed. The muscles are soft, but there is no sign of emaciation. There is marked pallor. The sclerotics are pearly white. The expression is anxious, and patient seems nervous and excitable.

Alimentary System.—The lips are pale and dry with a slight coat of sordes. Gums anæmic. Teeth are clean and in good condition with the exception of two carious stumps. Tongue pale, but fairly clean. Appetite poor. Patient complains of nausea and occasional sickness after food, The bowels only move about once in four days. There is no abdominal tenderness. The liver is not enlarged.

Hæmopoietic System.—There is no unusual enlargement of glands. The thyroid is not enlarged. The spleen seems enlarged on percussion and is vaguely palpable. A drop of fresh blood looks thin and watery and does not coagulate readily. Fibrin, however, is increased and plates are numerous. The red corpuscles number 840,000 per c.mm. Hæmoglobin is 20 per cent., and white cells number 6250 per c.mm. The average size of the red cells is distinctly increased. There is great diversity in size and considerable alteration in the shape of many of the corpuscles. In stained films, megaloblasts, and normoblasts are present. The white cells are slightly diminished in number. There is no alteration of the normal ratio of leucocytes to lymphocytes. The eosinophiles are diminished.

Circulatory System.—Patient is troubled with palpitation. There is marked dyspnœa. There is visible throbbing of the arteries in the neck and marked epigastric pulsation. A long, blowing, systolic murmur can be heard in all the areas. It is best heard in the pulmonary area. There is a loud ***bruit de diable*** in the neck. The pulse is 138 per minute, regular in time and force. The volume is rather small; tension is very low and not sustained. The vessel wall is not thickened.

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Respiratory System.—There is a slight, irritating cough. The pleura and lungs on examination seem healthy.

Integumentary System.—There is slight puffy swelling about the wrists. There is marked œdema at both ankles.

Genito-Urinary System. — Urine pale, sp. gr. 1010, acid, contains no abnormal constituent. Patient missed her last period.

Nervous System.—Patient is very excitable, and does not sleep well. She complains of tingling in the fingers when they are the least chilled. There is very slight ptosis of the left eye. Patient says this began during her first attack of anæmia when she was sixteen. The pupils are dilated. They react well to accommodation and light. The fundus is healthy.

Locomotory.—Patient complains of pain in the legs and wrists, and there is some tenderness over the tibiæ.

Diagnosis, Treatment and Progress.—When this case was first seen we had to deal with a patient, a young woman of twenty-one, who complained of pain and swelling of the wrists, who looked pale, whose circulation was excited, and whose temperature was 101° F. The diagnosis then made was acute rheumatic endocarditis. She was put to bed, fed on milk diet, and treated medicinally with grs. xv of salicylate of soda every four hours. There was very little improvement. The temperature remained about 101° F. The skin became yellow, and the colour became gradually deeper. Listlessness continued. Nine days later, as a result of the blood examination, the salicylate was stopped, and arsenic was administered in increasing doses. Patient complained of pains along the gums, and the two stumps already referred to were extracted. There was no indication of inflammation or abscess in connection with them. The yellow colour now rapidly disappeared, and in a week (Feb. 4th) the red cells rose in number to 1,231,200. By February 10th, patient was taking ℥ x of Liq. of Arsenicalis three times daily, but on that day she vomited. She was again sick on the 11th, and complained of pains along the tibiæ. Next day the temperature reached 104°. Arsenic was stopped, and beta-naphthol was given. On February 15th, the temperature was down to 98·6 F. Arsenic was resumed, and the beta-naphthol continued. On February 18th, patient was much better, and for the first time since her admission, took an interest in her toilet, and had her hair curled. On February 20th, a faint rash appeared on the face, neck, chest and limbs. The eruption consisted of small, dark-brown scarlatina-form spots. This disappeared on February 22nd, and was followed by a slight desquamation on the face. On March 5th, a second rash appeared on the face. This eruption had the same brown

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colour as the former one, but it appeared in large, scally-looking patches. Beta-naphthol and arsenic were stopped, and patient got no medicine for a week. On March 18th, Blaud's Pill (gr. v) with Arsenious Acid (gr. $\frac{1}{10}$) was ordered. From this time patient made steady progress, and on March 23rd left hospital. By this time the cardiac bruits had disappeared, the spleen still seemed a little enlarged, and patient complained merely of being easily fatigued, and of some dimness of vision. No change in the fundus or error of refraction could be found to account for the latter. The last time patient was seen, her red corpuscles numbered 4,700,000, and hæmoglobin was 70 per cent. She has remained well, when last heard of in July 1900.

TABLE VII.

Date.	Red Cells per c.mm.	White Cells per c.mm.	IIb.%	Colour Index.
1900.				
Jan. 28th	840,000	6,250	20	1·2
Feb. 4th	1,231,200	5,312	22	·9
„ 11th	1,200,000	2,812	22	·9
„ 18th	1,837,200	2,500	28	·7
„ 25th	2,480,000	2,108	20	·4
Mar. 4th	1,937,200	945	20	·5
„ 11th	1,832,000	2,500	20	·5
„ 18th	2,900,000	1,250	25	·4
Apr. 8th	4,280,000	6,562	70	·8
„ 28th	4,700,000	5,562	70	·7

TABLE VIII.

	Percentage of White Cells.			Per 1000 White Cells.	
Date.	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Normo-blasts.	Megalo-blasts.
1900.					
Jan. 28th	75·4	24·6	0	16	4
Feb. 4th	78	18	3	1	0
„ 11th	84	16	0		
„ 18th	69	31	0		
„ 25th	76	20	4		
Mar. 4th	56	32	12		
„ 11th	80	16	4		
Apr. 8th	80	19	1		
„ 28th	58	36	6		

This is a case of considerable interest. Although the pallor was marked when the girl presented herself, the diagnosis of

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pernicious anæmia was not thought of. This may have been in part due to the fact that it was quite exceptional for a girl of her age who did not suffer from anæmia to appear at Yarmouth Hospital. It may be of service in connection with both the etiology and diagnosis of this case to mention some facts regarding the extraordinary prevalence of anæmia at Yarmouth. Of 1150 (male and female) cases coming in ordinary course to the Out-patient Department of the Hospital, 115 were cases of anæmia. This number is exclusive of cases suffering from other conditions complicated by anæmia. The patients were girls working in the curing-houses, silk factory, or as servants. Their appearance and symptoms and the condition of the blood were monotonously similar. I have tabulated twelve consecutive cases.

TABLE IX.

No.	Occupation.	Age.	Red Cells per c.mm.	White Cells per c.mm.	Hb. %	Colour Index.
1	Servant	21	3,000,000	4,062	15	·25
2	Housework	21	3,582,400	3,125	30	·42
3	Beatster	17	4,270,000	4,687	45	·54
4	Servant	23	4,150,000	3,516	25	·3
5	Housework	15	3,800,000	3,125	35	·46
6	Servant	17	4,500,000	3,515	15	·17
7	Schoolgirl	14	3,880,000	2,148	35	·45
8	Staymaker	16	3,080,000	6,586	35	·57
9	Housework	15	2,938,000	5,312	30	·51
10	Housework	16	3,589,600	6,250	35	·49
11	Factoryhand	23	2,320,000	1,870	25	·54
12	Factoryhand	20	3,200,000	3,750	30	·46

The differential leucocyte count of the first three is typical of the others. In a very few cases were normoblasts found and they were in no case numerous.

TABLE X.

	Polymorphs.	Lymph.	Eosin.	
1	66	33	1	per cent.
2	77	22	1	
3	66	32	2	

As regards etiological factors, it is difficult to ascertain anything that does not exist to a similar or greater extent in larger towns. Yarmouth cannot be regarded as an unhealthy

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town and a visitor to the Out-patient Department of the Hospital would perhaps notice the comparative rarity of phthisis next to the prevalence of anæmia. The level of the ground water is high. David Copperfield was right, when he thought "that if the land had been a little more separated from the sea and the town and the tide had not been quite so much mixed up, like toast and water, it would have been nicer." As regards the social conditions of these girls, their homes compare favourably with the homes of the same class in Edinburgh. Their food is fairly good. They eat too many "sweets" and live mainly on bread, fish and pork. As regards personal habits and cleanliness they compare very favourably with the factory girls of such towns as Dundee or Brechin.

CASE IV. was one of this class, and according to her own statement, she had on two occasions suffered from the prevailing anæmia, but there is no history of any cause of the later illness that was not common to all the others. Though she had two loose stumps, her teeth as a whole were unusually good. It is hardly conceivable that they should have been the source of her illness. That the case, however, was essentially different from the group just described, is apparent from a comparison of the tables shown. While the lowest number of corpuscles in the chlorosis series is over 2,000,000, in Case IV. they numbered 840,000. Hæmoglobin in Case IV. was 20 per cent. In some of the chlorosis cases, it is below that figure. While in Case IV. the colour index on the first examination was 1·2, the highest colour index in the twelve chlorosis cases was ·57 and the lowest ·17. The large size of the red cells, the absence of a central concavity, the presence of polychromatophilia and megaloblasts were other points in which the results of the blood examination differed from that of the chlorotic cases. Apart from the blood examination, the yellow colour, the high temperature, the attacks of sickness, the enlarged spleen, the great circulatory excitement and the nervous phenomena were amply sufficient to justify us in holding that the case was not chlorosis. But was the case one of pernicious anæmia?

Against the diagnosis of pernicious anæmia were the presence in the blood of an increased amount of fibrin, a large number of blood plates (though observers differ as regards the number of the plates in pernicious anæmia, *vide infra*), the small number of megaloblasts and the fact that poikilocytosis was not well marked. These objections, however, are not serious, and the list of symptoms enumerated above is almost exclusive. Ulcerative endocarditis might give rise to the same group of phenomena and the same degree (if not the same variety) of

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anæmia, but the excellent recovery (for the time being, at least) without any sign of cardiac lesion, excludes that diagnosis. The fact of rapid recovery may be urged against the diagnosis of pernicious anæmia, but remissions more rapid are fairly common. In one of Cabot's cases (*American Journal of Medical Science*, Aug. 1900), the red cells increased from 1,800,000 to 5,200,000 in fourteen days. It is possible that there was a slight rheumatic element in the case, and this would account for the increase of fibrin. The case must be considered as one of pernicious anæmia, but cannot be regarded as typical. Further observation may give us more definite knowledge.

Regarding the progress of the case, it is interesting to note that improvement followed a febrile attack. Whether the rapid fall in temperature after the administration of beta-naphthol was merely *post hoc* or *propter hoc* one cannot say. The skin eruptions were probably due to the beta-naphthol. The great and rapid improvement following the administration of iron after the colour index had become low, is worthy of note.

CASE V. A boy, aged 11, born in Antrim and residing at Broxburn, was admitted to the Royal Infirmary under the charge of Dr James on May 5th, 1900. He complained of weakness of six months' duration. There was no history of any family tendency towards disease, but three brothers had died in childhood. He had received good food. His only previous illness had been measles when nine years old. His illness was said to have dated from a kick on the abdomen sustained while he was playing football in September 1899. He had not been much affected at the time, but had begun to get pale, and by December he had become very weak and had occasionally complained of sickness. It was stated on several occasions he had vomited dark, altered blood. His parents had noticed frequent oozing of blood from his mouth. The bleeding had never been profuse, but almost constant. He had been treated at home with some form of iron. At the New Year he had passed a small quantity of red blood by the rectum. He had occasionally since passed blood by the rectum, but it always, latterly, had been dark in colour. The pallor and weakness had gradually increased, and a week before his admission he had become unable to walk. On admission, patient was found to be well developed, extremely anæmic, but not emaciated. There was no evidence of injury or disease. On the abdomen were a few small nævi. As regards the alimentary system, the lips and gums were exceedingly pale. Blood could occasionally be seen oozing up around the teeth. The teeth were good. There was occasionally sickness after food. The bowels tended to be

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confined. The lower border of the liver in the nipple line reached 1½ inches below the costal margin.

Hæmopoietic System.—There were no enlarged glands. The spleen was not enlarged. The blood was exceedingly pale. On puncturing the skin the drop that exuded looked like serum. Fibrin was much diminished, coagulation slow and rouleaux formation practically absent. The red cells numbered 485,000, white 2184 per c.mm. Hb. was 8 per cent. There was great diversity in the size of the red cells but there was not so much deformity as might have been expected. There were degenerative changes in the red cells, and well-marked polychromatophilia. Several large, nucleated forms were present. Leucocytes were diminished. A few myelocytes were present.

Circulatory System.—Patient complained of palpitation and dyspnœa. There was visible pulsation of the carotids and in the epigastrium. On auscultation, there was a long, soft, mitral systolic murmur, a systolic murmur heard in the pulmonary area, and a tricuspid systolic murmur. Both aortic sounds were accompanied by murmurs. The pulse was 120, regular in time, rather irregular in force. The tension was very low. As regards the integumentary system, there was marked pallor, no yellow discoloration, and no hæmorrhages. The urine was pale, acid in reaction, with sp. gr. of 1012. As regards the nervous system, the boy was drowsy and at times restless. Voluntary motor power was very much diminished, but the reflexes were unaltered. The fundus showed no hæmorrhages.

Treatment and Progress.—The boy was put on milk diet and treated medicinally with Liq. Arsenicalis in increasing doses, and 3 minims of tincture of digitalis thrice daily. He did not improve. On May 15th an injection of Brown Séquard's bone marrow and spleen juice was given. Next day an injection of antistreptococcus serum was tried. This was followed by a rise of the temperature to 101° F. Still there was no improvement. Bleeding from the gums continued at intervals. The injection was repeated three days later, but no reaction followed, and next day the boy died. A *sectio* was not allowed.

TABLE XI.

Date.	Red Cells per c.mm.	White Cells per c.mm.	Hb. %.	Colour Index.
1900.				
May 5th	485,000	2,184	8	·8
„ 15th	480,000	1,500	5	·5
„ 20th	295,000	20,000	5	·8

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TABLE XII.

Date.	Per Cent.				Per 1000 White Cells.	
	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Myelo-cytes.	Meg.	Normo.
May 15th	53	47	0	0	5	0
„ 20th	25	73	·3	·2	4	25

Before discussing this case, I should like to give some notes of another fatal case of anæmia in a boy aged eleven.

Case VI.—A boy of eleven was seen on June 25th, 1900, at his home. His parents stated that he had suffered from measles when he was five, and that when he was seven he had taken a fit. They further stated that he had been ill for ten weeks, and that the first symptom had been an attack of epistaxis. Subsequently epistaxis had recurred on two occasions, and a fortnight before he was seen a rash had appeared. A week later he had an attack of hæmatemesis. The boy was found to be apathetic and drowsy, and could not be got to answer questions. He looked profoundly anæmic. He was well developed, thin, but apparently not much emaciated. His lips were coated with sordes. Teeth were dirty, but not carious. Tongue dry and furred. Bowels had been confined. The submaxillary lymphatic glands were slightly enlarged. The spleen was not enlarged. There were hæmic murmurs at all the areas, and there was the gallop rhythm. The pulse was 140 per minute, irregular in time and force, of very low tension and small volume. Respirations were 40 per minute, shallow and sighing. There were numerous purpuric spots—petechiæ and vibices—on the trunks and limbs. There was no œdema. Urine was pale. Its sp. gr. was 1008, its reaction acid. It contained no abnormal constituent. He was ordered milk and beef tea and a mixture containing digitalis and arsenic. Two days later he was admitted to Dr James's ward in the Royal Infirmary, where an opportunity was afforded for examining the blood. The blood looked pale. Fibrin was diminished. Plates were scanty and coagulation was slow. Poikilocytosis was present, but not very marked. There was some difference in the size of the red cells. The red cells showed only slight degenerative changes and no polychromatophilia. The only abnormal cells found were normoblasts. The boy died two days after his admission to hospital.

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TABLE XIII.

Date.	Red Cells.	White Cells.	Hb.	Colour Index.
Jan. 27th	875,400	Increased	14%	·8

TABLE XIV.

Polymorphonuclear.	Lymphocytes.	Eosinophiles.	Normoblasts.
57%	42%	1%	7 per 1000 white cells.

Cases V. and VI. form an interesting contrast. Both were boys aged 11. Both came from mining districts. Their symptoms were remarkably similar, and both seem to have died from sheer bloodlessness. Case V. was pernicious anæmia; Case VI. hæmorrhagic purpura. In both cases the cause of illness was obscure. It is hardly likely that the blow on the abdomen, of which there is a history in Case V., should have had any direct causal connection with symptoms which were not marked till three months afterwards. The first symptom noticed in Case V. was pallor and then bleeding from the gums. In Case VI. epistaxis was the first symptom. In Case V. the bleeding was all from the alimentary canal—gums, stomach, rectum. In Case VI. the hæmorrhage occurred as epistaxis and petechiæ. The effects on the circulatory system were somewhat different in the two cases. In both cases it was profoundly depressed, but in Case V. there seemed to be a certain amount of reaction. There was visible carotid pulsation, and till near the end the pulse was regular, its rate being about 120. The respirations were slightly quickened. In Case VI. there was gallop rhythm with an irregular pulse of 140 per minute, while the respirations were 40 per minute, shallow and sighing. Mentally both cases were very drowsy; but while Case V. could be roused and got to answer questions intelligibly (while he had four hundred thousand red corpuscles), Case VI. (with eight hundred thousand) when roused only displayed feeble signs of irritability. Comparing the results of the blood examinations, we find in both cases slow coagulation, scanty fibrin, and few plates. Case V. showed the more marked poikilocytosis and greater diversity in size. In Case V. the red cells stained more darkly with eosine, and were of a slightly larger average size than in Case VI., and there was polychromatophilia which was absent in Case VI. Case V. showed megaloblasts, normoblasts, and myelocytes. Normoblasts were the only abnormal cells found in Case VI. There was a higher percentage of lymphocytes in Case V. The last counts in Tables XI. and XII. should, how-

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ever, be omitted for purposes of comparison between the two cases, as they are complicated by an extreme terminal lymphocytosis. The low colour index (for pernicious anæmia) in Case V. is accounted for by the hæmorrhage.

Special Article

THE HAMILTON BED IN THE ROYAL MATERNITY HOSPITAL, EDINBURGH

IT is only during the past year that the attention of the medical profession has been specially directed to the question of the falling birth-rate. For many years the enormous mortality of infants during the first few months of life has been a matter of serious concern, both to the scientific world and to the State, and much has been done by improved methods of feeding with purer milk, among other things, to reduce the number of deaths at this period of life.

But there is another aspect of the question. While we may deservedly congratulate ourselves on having coped with this problem of infantile mortality with partial success, we are at the same time compelled to recognise that the actual birth-rate is slowly but surely declining. Of every thousand children born, 200 or more die in the first year of life, and a large proportion of these deaths are independent of dietetic causes. If fewer children are in the future to be born, by what measures may we hope to save a greater number alive?

To Dr J. W. Ballantyne[1] belongs the credit of suggesting the only rational method whereby it becomes possible to practise preventive medicine in the case of the pregnant woman and of her unborn child.

It is perhaps scarcely recognised, but it is true, that practically no provision is made in general hospitals for the ailments of pregnant women, and in maternities they are not admitted before full term, or at anyrate till "pains have begun." Where are they to go? Dr Ballantyne's plea is for a hospital where pregnant women can be received—a special hospital for those who for one reason or another are in urgent need of assistance at dangerous periods during pregnancy. It is at such times that we are able to combat many of those conditions which are so dangerous to the child's life, and we can also often modify and correct conditions which might give rise to danger during its birth.

[1] *Brit. Med. Journ.*, April 6, 1901.

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Looking at the question from the standpoint of humanity alone, can we imagine any circumstances under which our special services will be more valued than those which may result in the continuance of pregnancy with safety to the mother, and the birth of a living child?

But this, though the main object of such a hospital, represents but a small fraction of its sphere of usefulness. A pre-maternity hospital, fully equipped with necessary apparatus and officered by a competent medical staff, would constitute an invaluable annexe to the maternity proper. At the present day the opportunities afforded for a scientific study of the various pathological conditions of pregnancy are entirely inadequate, and hence the uncertainty of our knowledge as to the real nature of such conditions as puerperal eclampsia, hyperemesis gravidarum, hydramnios, hydatid mole, and of many of the causes of fœtal death. A true knowledge of all these problems, and many more, might be successfully attained in such an institution as the pre-maternity hospital.

Infantile mortality in relation to the occupation of married women has recently received some attention,[1] and it would seem probable that working women who are able to rest for the last month or two of pregnancy give birth to larger and more healthy children. On the other hand much may apparently be done in those cases where very large infants are dead-born on account of their size. Prochownick[2] and others have tried the effect of variations in maternal diet upon the bulk of the fœtus with undoubted success, and Noël Paton,[3] from a series of preliminary experiments made on guinea-pigs, confirms the contention that it is possible by diet to affect the weight of the fœtus *in utero*. If we can influence the size of the infant in this way the advantages in some cases are obvious. In a recently published leading article the aspects of this question are discussed in a very able and suggestive manner.[4]

Obstetricians are gradually coming to recognise that much more careful attention should be given to pregnant women, especially during their first pregnancy, and the existence of special hospitals would greatly assist in this matter. Already a beginning has been made, and it is encouraging and gratifying to see that through the generosity of an anonymous donor a bed has been endowed and set apart in the Royal

[1] *Brit. Med. Journ.*, Sept. 7, 1901.

[2] Ueber Ernährungscuren in der Schwangerschaft. Therapeut. Monatschefte, Hft. 8 and 9, 1901.

[3] *Brit. Med. Journ.*, Nov. 2, 1901.

[4] *Brit. Med. Journ.*, Oct. 19, 1901.

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Maternity Hospital of Edinburgh for the study of diseases of pregnancy and of the unborn child.

So far as we know this is the first instance in which a bed has been specially set apart for this purpose in any maternity in the world. Already—during the last few weeks—three cases have been under treatment: a hyperemesis gravidarum, a hydramnios, and a patient who at the fifth month of her gestation is suffering from epileptiform seizures without albuminuria. A fourth patient is awaiting her turn, and it is certain that this bed will not lack fit and proper occupants in the future.

In the meantime it is our duty in private practice to devote greater consideration to the needs of parturient women, and we feel sure that much may be learnt, and many complications avoided, by following the advice of Byers,[1] who says: "A pregnant woman, when she engages a doctor to attend her, should be examined as carefully as if she were an applicant for life insurance."

H. O. N.

Clinical Notes

A CASE OF ACUTE ABDOMINAL DISEASE, WITH UNUSUAL SYMPTOMS

By G. LOVELL GULLAND, M.D., F.R.C.P.Ed.,

and

R. ROBERTSON, M.B., C.M., B.Sc.

THE following case, though easily understood in the light of the *post-mortem* examination, was so puzzling during life that it seems desirable to record it. The patient, a man aged 32 years, of good physique, and of most temperate habits, had been in fair health up till the morning of Sunday, Dec. 22nd, 1901. He had been at business all Saturday, and on coming home in the evening had taken a hearty supper of beef-tea and potted-head. Early on Sunday morning he woke with some gastric pain and vomited several times, the vomit consisting of altered food only. During Sunday he stayed in bed, and had turpentine cloths applied to the abdomen. His wife went to the chemist, described his symptoms, and was given some powders (nature unknown) to give to him. His wife says that he felt hot that evening. On Monday he was better, and went out for an hour or two, though he did not do much work. On Tuesday

[1] *Brit. Med. Journ.*, Oct. 5, 1901, p. 943.

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the sickness returned, though it was not great in amount, and the bowels acted. Dr Robertson was sent for early (5 A.M.) on Wednesday morning, because the patient had become much worse and had vomited a large quantity of coffee-ground material, and he thought his condition then and at a second visit (11 A.M.) so alarming that he advised a consultation. He succeeded in arresting the vomiting by a hypodermic of ¼ grain of morphia at 11 A.M. Dr G. saw the patient with Dr R. at 3.45 P.M. on Wednesday, Dec. 25th.

He was a well-built, well-nourished, muscular man, of regular habits, with no history of previous illness, no history of syphilis, or of alcoholic excess. He was pale and collapsed, with a normal temperature (it had also been normal when taken in the morning), and a pulse of 120, small and soft. Over the whole of the chest and abdomen, and over the back also, was a rash consisting of papules very slightly elevated, very closely set, and into and about the great majority of which hæmorrhage had occurred. Over the abdomen there was a general redness of the skin in addition (presumably from the turpentine, which had again been applied on Tuesday night). The rash did not extend to the face, arms, or legs. The patient was lying comfortably on his back, with the legs extended, did not complain of any pain, and was able to move about in bed without discomfort. He was quite clear mentally. On examining the abdomen it was not noticeably distended. On palpation there was slight tenderness in the epigastrium, but nowhere else, though of course no great pressure was used, in view of the hæmatemesis. No abnormal swellings were to be felt. The liver dulness was normal, except that in the middle line the lower margin was an inch or two higher than usual. The stomach was not distended, the splenic dulness was normal. There had been slight nausea and retching during the day, but no further vomiting. The bowels had acted on the previous day. There was no enlargement of lymphatic glands. The heart was normal in size, and there were no cardiac murmurs; the sounds were soft and feeble. The lungs showed no abnormality. The blood was not examined, but it was arranged that Dr G. should return next morning and make a full examination thereof.

The diagnosis was discussed with much interest and considerable perplexity. It was thought that while the rash might have been caused partly by the turpentine stupes, they could hardly have caused it to appear over the back, where its purpuric character was more marked than over the abdomen. Its presence was therefore felt to militate against a diagnosis of either gastric ulcer, cancer of the stomach, or cirrhosis of the liver, which might have caused the hæmatemesis. We felt

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moreover that the patient was more prostrated than he should have been from the mere hæmatemesis, considerable though that had been, and were more inclined to think that the hæmorrhage, by causing collapse and bringing down the temperature, was masking some febrile condition, either one of the fevers associated with a hæmorrhagic rash, or some less definite septic condition. It must be remembered that the initial vomiting had not been very severe, that there was no history of constipation, and that the stomach seemed to be the only part of the alimentary canal which was causing symptoms. The question of the presence of some blood disease was left over until the blood had been examined.

It was felt that the urgent indication was to arrest the bleeding, and measures to this end were adopted. The patient sank, however, and died early next morning.

A *post-mortem* examination was held on the following day, only the abdomen being examined. The cause of death was then found to have been a purulent peritonitis, caused by gangrene of the appendix. That structure was about three inches long, black and sloughing in its whole length, and perforated in several places. There was a good deal of pus round it, distributed among the coils of intestine, and in the whole of the lower half of the abdomen the intestines were reddened, and their interstices filled up with purulent lymph. There was some pus—two or three ounces perhaps—in the pelvis. The upper part of the abdomen contained some sero-purulent fluid, but there was no acute inflammation there. The liver was fixed everywhere to the diaphragm by firm adhesions of old standing, and the stomach and omentum were also attached to the liver by adhesions, though less firmly. The stomach was fairly distended, and contained about half-a-pint of coffee-ground material. There was no ulceration, but the mucous membrane was intensely congested, especially towards the pylorus, and was thickly set with small petechiæ, which at the pyloric end were confluent, and from which the bleeding seemed to have occurred. The upper part of the small intestine, so far as it was examined, was in the same state, and was full of altered blood. The intestines were not specially distended.

The case needs little comment. It seems to us that by the time we saw the patient an accurate diagnosis was impossible. The symptoms throughout, so far as we could elicit them, had pointed to the stomach rather than to the intestine as the seat of disease. A normal temperature occurs often enough in the late stages of peritonitis, and hæmatemesis is not unknown in that condition, though it seems very rare to have so large an amount of fluid brought up. The misleading elements in the case were

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the absence of pain after the first day, the absence of tenderness when we saw him, the absence of abdominal distension, and the purpuric rash. This must have been due to intense septic infection, and there were probably profound blood changes. The occurrence of such a rash must be extremely rare in peritonitis, as we have found no note of it.

The question of operative interference was of course discussed at the time we saw him, but we felt that even had the diagnosis been more certain than it was, the patient was not in a condition to undergo even an exploratory operation. We can only regret that the case was not seen earlier, but for this the comparative slightness of the initial symptoms seems mainly to have been responsible.

CASE OF RODENT ULCER TREATED BY X-RAYS

By JOHN R. LEVACK,
Aberdeen

LAST June George S——, aged *72*, presented himself for treatment at the surgical out-patient department of the Aberdeen Royal Infirmary suffering from a large ulcerating sore on his right temple. Rodent ulcer was diagnosed, and he was sent to the electric room for treatment by X-rays.

History of present condition.—Five months ago he noticed a small nodule on the right temple, which soon became a small ulcer, painless and discharging a little pus. The sore slowly increased in size and depth, and the discharge continued. Beyond an occasional twinge of pain he has suffered no discomfort.

Present condition.—Patient is a healthy-looking man, active for his years. On the right temple there is a roughly rounded ulcer a little over an inch in diameter. Its edges are rounded, firm, and indurated, and its floor granular, raw, and discharging some pus.

Treatment.—The ulcer was exposed daily to X-rays for three weeks, then every second day for another fortnight, each sitting lasting for two minutes. The patient's face was protected by a lead plate, having a hole cut in it equal in size to, and opposite the ulcer. The focus tube from which the rays emanated was held 4 in. from the sore. The coil is one of 10 in. spark, and the current used is direct from the mains at 100 volts, and interrupted by an electrolytic break. There was scarcely any reaction beyond a slight increase in the discharge, which became blood-stained. The ulcer slowly granulated up till its floor was

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flush with the surrounding skin, and then the epidermis spread inwards over it till healing was complete. The resulting scar is soft and slightly pigmented with a brownish tinge, so that it is barely distinguishable from the surrounding skin. There is no sign of recurrence six months after treatment was stopped.

Remarks.—Cases of rodent ulcer refusing operation, or where it is unsuitable on account of the patient's general health, or from the extent of the disease, can easily be treated by X rays with every hope of success. Should recurrence take place treatment can be resumed. Although in the above case no inflammatory reaction took place, this sometimes gives trouble, but can be controlled by suspending the sittings for a few days, and resuming with shorter exposures till healing is complete.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

ACROMEGALY

By G. LOVELL GULLAND, M.A., B.Sc., M.D., F.R.C.P.Ed.,
Assistant Physician to the Royal Infirmary, Edinburgh, etc.

THIS disease is so rare, and its causation and pathology are so little understood, that one welcomes the fortunate chance which brought four cases into the competent hands of Professors Fraenkel and Stadelmann in Berlin, and permitted their complete examination *post-mortem* by Professor Benda, who was already an authority on the diseased conditions of the pituitary body. The results of their investigations appear in the August numbers of the *Deutsche Medicinische Wochenschrift* of this year (Nos. 31, 32, 33), and form a valuable contribution to our knowledge of an obscure subject.

The main interest of these observations depends on the light they throw on the various current theories as to the relation of the disease to the alterations of the hypophysis (or pituitary body) which are almost constantly found in it. These theories are three in number. The upholders of the first recognise in the affection of the hypophysis the proper cause of acromegaly, but while some believe that the gland secretes a material which has a direct action on the growth of the extremities, others consider that it neutralises or alters products of the general metabolism, which, when the gland is diseased, remain unaltered, and produce the anomalies of growth observed in the patients. The second view is that the disease is

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a general affection of the blood-glands, not only, though principally, of the hypophysis, but of the thyroid, thymus, sexual glands, etc., caused by an unknown poison. This is Mendel's view, and is based mainly on a case of acromegaly described by him, in which in addition to disease of the hypophysis there were found a persistent thymus, a colloid goitre, an enlarged spleen, hypertrophy of the mammæ, and a cystic ovary. There is no doubt that there are certain facts in regard to acromegaly which point rather in this direction—the frequency of thyroid enlargement, the occurrence of amenorrhea early in the disease with atrophy of the genitalia, and in males, impotence, with atrophy of the testes, persistence of the thymus, and changes in the pancreas. These conditions, however, though not infrequent, are by no means constant. The third theory, advocated by Strümpell, is that the changes in the hypophysis are not causally related to the disease, but are symptomatic and merely co-ordinate with the peripheral overgrowth.

Unfortunately experiments on animals have not hitherto thrown much light on the disease. The hypophysis in cats has been removed without any effect comparable to acromegaly, but of course that does not disprove the relation of the gland to the disease, if Benda's view be correct that the condition is due to an over-activity of the gland. Sternberg's cases of acute acromegaly, where the disease developed in a few weeks, are in favour of a glandular causation, since in all of them profound alterations were found in the hypophysis.

The difficulties have been added to by the confusion of other anomalies of growth with acromegaly, and especially of the condition called by Marie "hypertrophic pulmonary osteo-arthropathy," and also known as "secondary hyperplastic ostitis," and "toxigenic osteo-periostitis." The slightest degree of this affection is seen in the clubbing of the fingers, which is so common in cardiac disease, congenital or acquired, in pulmonary disease associated with ulceration, in empyema, in malignant tumours of the lungs and mediastinum, in various chronic intoxications, and in cases such as dilated stomach, where there is absorption of the products of putrefactive processes. In the slighter degrees the change is only in the soft parts, but in marked cases there is in addition an ossifying periostitis which affects not only the finger bones, but the distal ends of the long bones, especially of the forearm and leg, and the metatarsals and metacarpals. This affection of the arm and leg does not occur in acromegaly, and in cases where the bones of the face are affected, in osteo-arthropathy it is the nose, forehead and upper jaw which become enlarged, while in acromegaly the lower jaw is characteristically affected in addition.

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The cases which Fraenkel and Stadelmann have met with may be summarised as follows :—

CASE I. Woman, aged 53, had suffered from the disease for six years. The bones and soft parts of the face much enlarged, and also the cartilages of the nose, ears and larynx. Tongue very large, hands and feet large, wrists and ankles relatively small. Great secretion of sweat. Nervous system normal, reflexes present, no alteration of field of vision, fundus oculi normal. Liver and spleen slightly enlarged, blood showed some anæmia. Urine, which was sometimes much increased in quantity, constantly contained albumin and occasionally sugar. The patient died from gradual cardiac failure extending over a year. The *post-mortem* examination showed a large tumour of the hypophysis, pressing on the chiasma and thinning out the optic nerves, and causing a good deal of absorption of the bone beneath. The tumour on section was greyish-red, soft and pulpy. Brain otherwise normal ; thyroid somewhat enlarged, as were also the spleen, pancreas and suprarenals.

CASE II. Man, aged 50. Father and a brother and sister had suffered from the same disease. He had noticed that his nose, hands and feet were slowly enlarging since he was 21. Was admitted by reason of gastric disturbance which had troubled him for some time and had become progressively worse. He was a typical case of acromegaly ; the enlargement was specially noticeable in the nose, tongue, lower jaw, hands and feet. The clavicles, ribs and xiphi-sternum were also thickened. The heart, lungs and nervous system were quite normal, all the reflexes were present, and the fundus oculi and fields of vision were normal. There was a secondary anæmia with leucocytosis. The patient became steadily weaker and died from peritonitis. On examination this was found to be due to a gastric cancer, which had perforated the lesser curvature. The blood-glands were all normal, and the only point of importance was the condition of the hypophysis. The posterior lobe was quite normal ; the anterior passed into a tumour-like mass which was attached to the bone at the sides of the fossa, had perforated into the sphenoidal sinus, and filled it almost completely. This mass was white and of the consistence of marrow.

The fact that in this case the growth had taken place in a downward direction explains the absence of cerebral symptoms and of any interference with the optic nerves, and possibly also the long duration of the case (nearly 30 years). The fact that there had been three other cases of the kind in the patient's family is also of interest ; a number of hereditary cases are now on record.

CASE III. Man, aged 42. Had suffered from acromegaly for

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six years, in a well-marked and typical form, and from diabetes mellitus for nearly as long. He died of diabetic coma soon after admission to hospital. The nose, orbital prominences, lower jaw, and especially the tongue, were much enlarged, and so were the hands and feet. The enlargement of the hands mainly affected the soft parts; in the feet the bones, especially the ends of the bones, and the terminal phalanges were much enlarged, and there were numerous osteophytes. The sella turcica, and indeed the greater part of the sphenoid bone, were completely destroyed by the hypophyseal tumour; it had penetrated far into the ethmoid, and even attacked the horizontal part of the temporal bone. The pancreas was normal, the thymus persistent.

CASE IV. Woman, aged 54, who died on the day of admission. She had a large goitre and a chronic nephritis, which had produced heart-failure and œdema. The most striking feature in this case was the great size of the nose, which had been increasing for thirty years; the enlargement of the hands and feet had been going on for seven or eight years. In this case again the enormous size of the tongue and the protrusion of the lower jaw were noteworthy. The bones, as a whole, were greatly increased in thickness, and Stadelmann, whose case it was, regarded it as probably an intermediate form between acromegaly and giantism. There was a tumour of the hypophysis, of which the right half was the larger, and was soft and pulpy. The bone about it was not eroded.

These four cases were all examples of the more chronic or benign form of acromegaly, which is terminated not by the changes produced by the disease itself, but by complications.

Benda, in his discussion of the pathogenesis of the disease, has turned his attention entirely to the histology of the hypophysis, as he found nothing in the other organs and tissues which was not already known, and known to be unimportant in this connection. The first point he desired to determine was, from which lobe of the hypophysis did the tumours take their origin? Some have held that the posterior lobe is responsible; and most authors believe that this lobe, if not responsible, has at least completely disappeared. Benda found, however, that it was present without taking part in the tumour-formation in all four cases, though it was pushed aside or thinned out in two of them, especially in Case I., where the tumour was a large one. That is to say, the anterior glandular lobe gave rise to the tumour in all cases, and he was able to trace the transition from the normal to the altered tissue. The structure of the normal pituitary body is that of a ductless gland, divided by a delicate stroma of connective tissue into acini and strands of

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epithelial cells. In some of the acini a colloid material is found. The cells are all granular, some with few granules, others with many granules which stain deeply with acid dyes, and with many transition forms. Where the change in structure to the tumour could be traced this tissue was found to become more vascular, and at the edge to be richer in connective tissue; then this last suddenly almost disappeared, and the tumour itself consisted of wide strands and masses of the cells separated only by blood-vessels and the merest trace of stroma from one another. The cells in two of the tumours were all of the strongly granular acidophile type (Cases II. and IV.). In Case III. other less granular cells were also present, but the structure was otherwise identical, and in Case I. the structure was the same, but here the non-granular cells were in the immense majority. The tumours are therefore adenomata, obviously simple in Cases II. and IV., but with a certain tendency to malignancy in Case III., which was still greater in Case I.; though this tendency is confined to the type of cell present, and to a local spread, for secondary tumours have never been found.

Many previous authors have described the tumours as sarcomata, but sufficient attention has not been paid to the presence of chromophile cells, and Benda has satisfied himself by the examination of the specimens that some, at least, of the tumours described as sarcomata are really identical with the adenomata he has described. It is more than likely that some of the tumours, originally simple, have taken on a more malignant character secondarily.

The bearing of these facts on the theories of the pathogenesis of the disease is of the greatest importance. Let us take first the view that pituitary enlargement is only one of the many symptoms of acromegaly, and not causally related to the disease. The main support of this theory is that neither removal of the hypophysis in animals nor the administration of the gland by the mouth has as yet produced any symptoms corresponding to those of acromegaly. Removal of the gland could only do so if the disease were due to its destruction, and not if it were due to an exaggeration of function, as seems more likely from Benda's results; and the failure of feeding experiments may be due partly to the fact that the experiments have not been continued long enough, or that the internal secretion of the hypophysis is not given to the blood in the form in which it appears in pituitary tabloids, if it is there at all, or that it is altered in the alimentary canal or not absorbed from it. We must not suppose, because thyroid secretion can be given in this way, that all other internal secretions are as tractable. Moreover, the fact that in none of the other hyperplasias which

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characterise the disease has there been observed the same tendency to a real tumour formation as in the hypophysis, goes to show that the impulse to growth in the two cases is a different one, and that they cannot therefore be merely co-ordinate.

Of the other theories, which all more or less regard the hypophysis as the cause of the disease, that which assumes it to be merely one factor in a general change in the blood-glands may next be considered. Part of the symptoms may certainly be due to the changes which have been observed in these glands, but these changes are by no means constant, and where any gland is not altered, the symptoms which would have been caused by its alteration are absent from the clinical picture. The only set of symptoms which remain unexplained in this way are exactly those which are characteristic of the disease.

The points against Marie's theory, that the disease is due to an abolition of pituitary function, analogous to myxœdema, are, first, that several cases have now been described where the tumours were so small, and their structure so little removed from the normal, that it is not possible to consider the function of the gland could be in abeyance. Secondly, the failure of extirpation experiments might be adduced, but it is of more importance that tumours which really did destroy the gland have been observed in several cases, and have either had no effect on the general bony system, or have been associated with dwarf-growth. Degenerative changes in the gland have also been observed in cretinism and in Graves' disease, in both of which diminished growth or atrophy of the skeleton may take place.

Benda's conclusion is that the disease depends on an increase of the function of the gland. This is the only view which allows all the enlargements of the gland to be regarded from the same point of view. In the hyperplastic cases there must be an increase in the amount and utilisation of the secretion; and in the cases where a more malignant form is found *post-mortem*, the presence of unaltered islets of normal gland-tissue in the tumour allows us to suppose either that malignancy (to give it that name) has been grafted secondarily on hyperplasia, as seems likely from the long course of the disease in some of these cases, or else that these apparently malignant cases are not really so, but that the cells remain capable of elaborating secretion. Benda regards the fact that the granular acidophile cells were so markedly increased in three of his cases as a strong proof that the function of the gland was increased, as from other observations he has come to regard them as the active part of the gland, and as in cases where atrophic changes had manifestly taken place, they were greatly diminished or absent.

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If we take the view that Graves' disease is due to over-action of the thyroid gland, acromegaly would be analogous to it rather than to myxœdema.

SURGERY

THE TREATMENT OF APPENDICITIS

By J. W. DOWDEN, M.B., F.R.C.S.,
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THE treatment of appendicitis must always be of interest, and this is especially so at the present time on account of the attitude taken by many competent men, who regard the condition, especially in the early stage, as essentially surgical in character.

The *International Medical Magazine* for November is devoted to the subject, and the number opens with a series of questions, seven in all, on the treatment of appendicitis, followed by the answers of ten well-known American medical men.

The questions are as follows:—

(1) *Generally speaking, what mode of treatment do you advise during the first two days of a mild or moderately severe attack of appendicitis?*

In answer to this, five recommend rest, three operation, and two say operate, unless the case is a mild one.

The palliative measures employed are many. The three surgeons who advocate early operation are Murphy and Ochsner of Chicago, and Robert Morris of New York. Murphy in his answer says: "The symptoms of the first two days are no index to the severity of the subsequent pathological changes." Ochsner states that the early operation "relieves the patient permanently of his disease, with all its dangers and complications, such as ventral hernia, adhesions and, of course, recurrence."

(2) *What mode of treatment do you advise in a severe case in the same stage?*

Nine advocate operation, one tries colonic lavage first of all.

Robert Morris, who has had a very large experience, says: "A concretion on the point of causing perforation in an hour or two may cause slight symptoms. A simple, harmless mucous inclusion may cause violent symptoms."

Murphy's answer to the question is: "Every case is a severe case, for one cannot tell what is going to follow, no matter how mild the symptoms may be."

(3) *What treatment do you advise during the active stage, from the beginning of the third day on, in a mild or moderate*

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attack of appendicitis — (a) *when the condition is growing worse;* (b) *when the condition seems to be stationary;* (c) *when the condition is improving?*

In answer to (*a*), seven recommend that an operation should be performed; to (*b*), four say operate, two are indefinite, and four are against operation; under (*c*), two say operate, two are indefinite, and the others prefer waiting.

(4) *What treatment do you advise during the same active period in a very severe attack with great depression of the vital powers?*

Nine recommend operation in this condition. Ochsner is the one who urges other treatment—exclusive rectal feeding, no nourishment of any kind, nor cathartics by the mouth—he advises gastric lavage. His statement is very decided, for he says by these means the pain, meteorism and depression decrease within the first six to twelve hours to a marked extent, and disappear within twenty-four to forty-eight hours; in the same time the pulse drops below 100.

(5) *If called to a case which has been treated medically or expectantly, at the fourth or fifth day, and you find the acute attack subsiding, pain absent, temperature at* 100 *or below, no tenderness on palpation except over the cæcum, but a brawny, tender swelling there, do you advise operation at once, or waiting for all the acute symptoms to subside?*

In answering this question eight advise waiting, one operation, and one operation if called to see a patient some distance from skilled operative assistance, where it is impossible to watch the case closely.

Morris, who advises operation in these cases, says: "Operation at once. The brawny swelling means abscess walled in. It may become absorbed and it may not. We have no moral right to allow any patient who trusts us to take chances of danger that are involved in 'absorbing an abscess.'"

(6) *Under what circumstances would you advise against operative intervention in acute appendicitis?*

This question is variously answered according to the methods of treatment generally carried out by each individual. Three say when moribund, one in mild attacks and general peritonitis, another when the patient has severe complicating general conditions.

(7) *After a single mild or moderate attack, is it best to operate when convalescence is complete, or to wait until after a second or third attack?*

The opinion of the majority is strongly expressed in favour of operation after the first attack, eight being in favour of it, and only two who wait till after the second or third attack.

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Murphy concludes his series of answers by saying: "*The real life-saving operation is the operation, within the first twenty-four hours of the first attack, by a competent surgeon.*" The italics are his.

In the same journal there are papers by Benedict and a translated one by Boyet on the diagnosis of appendicitis, and Ochsner of Chicago contributes one also in which he advocates early operation in all cases, provided there is a competent surgeon. After the third day he advises rectal feeding only, gastric lavage, no cathartics or enemata, and this is to be continued till the temperature is normal for several days before he begins feeding by the mouth. He mentions his statistics, which are interesting. In three and a half years he has operated on 616 cases. Seventeen were complicated by diffuse peritonitis, with a mortality of 8. There were 192 cases of complication with perforation or gangrene but not general peritonitis; of these 9 died; 407 cases were operated on either at the beginning of the attack or during the interval, and were uncomplicated; of these one case died, owing to an error. When a case has passed the first two days without being operated on he considers the most important practical factor to carry the patient to the quiescent period to be the employment of gastric lavage and rectal feeding, no food, no cathartics, because these are likely to distribute infection over the peritoneum through the intestinal peristalsis induced.

W. E. Ford writes an article on the medical aspects of appendicitis, in which he endeavours to show that there is too much encroachment by the surgeon on a condition, at anyrate to be diagnosed by, and to a great extent treated by, the physician. He is one of the few who advocate the use of morphine hypodermically; the other means he employs are emptying the bowel, the ice coil, and but little food. He advocates operation in cases growing worse in twenty-four to forty-eight hours. Later, if signs of adhesions, he advises the use of galvanism over the cæcum. There is a translation of a paper by Professor Faure of Paris from *L'Independ. Med.*, in which he advocates operation in the first twenty-four hours if diagnosis has been made; he advises waiting if the signs are ameliorating and operation if they do not.

In the *Birmingham Medical Review* for December, Jordan Lloyd has a paper in which he says with regard to operation: "It is often a difficult question to decide, but I am convinced that whilst there are clear indications for surgical interference in some cases and for non-surgical interference in others, there is a large class open to doubt, and in all these I think operation is the safest alternative. I have never been disappointed by operating too early in such cases. I have often had reason to

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regret delay." Senn of Chicago in *The Clinical Review* for December, while describing an operation on an individual for relapsing appendicitis, remarks as follows: "This case, like in many similar ones, shows that when we operate on a patient in whom the attacks have been comparatively mild, we often find the greatest obstacles in the way of an easy operation." It is interesting to read in connection with these articles a paper by Da Costa, junior, in the *American Journal of Medical Sciences* for November on "The state of the blood in appendicitis." He has investigated 118 cases which have been operated on later, and found that before operation in an average case there was a loss of 30 per cent. of hæmoglobin and more than half a million of erythrocytes in the cubic millimeter. He has found moderate leucocytosis either with or without abscess. It was present in 35 per cent. of non-purulent cases and in 90 per cent. of purulent; when the leucocytosis is marked, almost invariably there was pus, gangrene or local peritonitis. Leucocytosis may be absent in catarrh, fulminant cases or circumscribed abscess, and in cases of intense infection, when its absence is of grave import.

Leucocytosis is of no value in making a differential diagnosis, as it is present in pyosalpinx, ovarian abscess, ectopic pregnancy, hepatic, perinephritic abscess, malignant disease of the cæcum, renal and hepatic colic.

The impression left by reading the recent literature on the subject of appendicitis is that the condition is essentially surgical in character from the outset.

In the first place, do we gain any further help in the diagnosis of the local condition? The answer cannot be in the affirmative, for no one as yet has the gift of being able to tell with accuracy whether an attack is due to catarrh, gangrene, perforation or calculus. J. B. Deaver in his *Treatise on Appendicitis*, 1900, says with an experience of 577 cases operated on by himself, "we cannot foretell with even the slightest amount of assurance the issue of an attack of appendicitis, nor can we be certain of the nature of the lesions of the appendix from the clinical manifestations."

In the second place do we gain anything from expectant treatment? No definitely affirmative answer can be given to this either, but there is a large choice for the physician who calls the surgeon in as a last resort: starvation, light food, rectal feeding, gastric lavage, colonic lavage, cathartics, no cathartics, enemata, injections of olive oil, anodynes, no anodynes, salol and other intestinal antiseptics, hot and cold applications, icthyol or mercurial ointment. There is, however, one fact all are agreed on, most of all the patient, and that is *rest*. Wyett even endorses this natural tendency, by the application of plaster of

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Paris over the abdomen and right thigh to prevent "movement of the abdominal, iliacus and psoas muscles." In fact one is led to think that in spite of these palliative forms of treatment, nature is the reliever of that large majority who recover from their first attack of appendicitis. Will it recur?

Thirdly, do we gain any knowledge surgically? Most certainly we do. The enemy has been attacked at long distance ranges through the mouth, rectum and skin, but hidden in a little donga it is impossible to say that this enemy is for ever quelled; marauding bands may at any time break out, and Deaver with his great experience says, 67·8 per cent. do. It is obvious therefore that the best way to be quit of him is to early remove him, lock, stock and barrel.

We cannot trust to such a rare occurrence as that reported by Wallace in *American Medicine* for Nov. 9th, 1901, where the appendix was passed per rectum the day before operation was decided upon.

There is no doubt much to be said from the medical point of view, because the physician who assiduously attends a case, and calls the surgeon in as a last resort, is lauded for his sympathetic care and skill; and the surgeon—well, he is the labourer and possibly worthy of his hire.

LARYNGOLOGY

DISEASES OF THE EAR, NOSE AND THROAT

By R. MACKENZIE JOHNSTON, M.D., F.R.C.S.Ed.,
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The uses of Adrenalin.—The extract of the supra-renal gland has been used in rhinology and laryngology for a considerable period now, in spite of the difficulty of obtaining a uniform preparation that does not decompose almost immediately. Recently the active and blood-pressure raising principle of the gland has been successfully separated, and according to those who have given it a trial it is much more active, more stable and convenient than the former, and it promises to be of use in many ways that had not been thought of in connection with the extract.

The active principle of the supra-renal gland has been obtained by three individual workers who have named the substance discovered Epinephrin (Abel), Suprarenin (Fürth), and Adrenalin (Takamine). The latter is stated to be chemically pure, while the two former are said to be contaminated with other derivatives of the gland. Adrenalin is a whitish, crystal-

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line, slightly alkaline powder, and forms salts with hydrochloric and other acids. A few drops of ferric chloride added to a solution of 1 in 100,000 will produce a decided greenish colour, while gold chloride gives a red colour. It is a powerful reducing agent and has been used with success as a developer in photography, for which it is not suited, however, owing to its high price. It is a most powerful astringent and produces very rapidly a strong action upon the muscular system generally, but specially on the muscular walls of the blood-vessels and of the heart, resulting in a very considerable rise of blood-pressure. It is more than 1000 times stronger than the fresh gland, but the lethal quantity is yet unknown.

Adrenalin is not readily soluble in water and is easily oxidised and decomposed; but the chloride is freely soluble, and will be found to be the most convenient preparation for practical use. A solution of the chloride, 1 in 1000, is supplied by Parke, Davis & Co., which will keep unchanged for a considerable time, if protected from light and air, and can be diluted with normal saline solution to any desired strength, and can be sterilized without decomposing the salt.

Clinically the first and most noticeable characteristic of the drug is its power of controlling or preventing hæmorrhage. Its powerful action as an astringent has the effect of contracting and blanching the mucous membranes, and this is of very great service both in the examination and in the treatment of diseases of the nose and throat. Surgical operations in these regions are much interfered with by even a small amount of blood which obscures the view, but by using a little of the adrenalin solution before commencing, the necessary procedures can be carried out so as to leave the field practically bloodless, and the operation can be performed with a comfort and an ease not formerly possible. Several observers are agreed that the hæmorrhage that may follow after its effects have worn off is not any greater than it otherwise would have been.

Its astringent action has been found useful in aborting attacks of follicular tonsillitis, pharyngeal catarrh, nasal coryza, acute middle ear inflammation, and other similar conditions, while in hay fever it seems to promise to be the most satisfactory preventive of an attack that we possess. Besides its power of controlling epistaxis, it is likely to prove serviceable in acute laryngeal catarrh, œdema of the glottis, erectile swelling of the turbinals, and many other nose and throat conditions. It is also said to be well suited for various operations and conditions in diseases of the eye. If cocaine be used after adrenalin solution has been applied to the part it seems to increase the anæsthetic action of the former; but what is of even greater im-

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portance, it is stated that toxic symptoms from cocaine never appear when it is used along with adrenalin.

In addition to its local uses in eye, ear, nose and throat work, the internal administration of adrenalin has been suggested for several other conditions, such as hæmoptysis, hematemesis, etc. The great rapidity with which it acts on the circulation makes it probable that it would be of service in surgical shock and in the collapse which sometimes follows chloroform administration. So far as we are aware, it does not seem to have been tried in any such emergencies, but it is worth while keeping it in mind for such circumstances. As a result of a series of experiments carried out upon dogs, Reichert is also of opinion that the substance is pre-eminently suited to counteract the lethal influences of opium and morphine. Its use in weak, irregular action of the heart, dilatation of the heart, organic disease with weak pulse, and other conditions, will readily suggest itself to the practitioner.

For local use the chloride is recommended in the form of the solution of the strength of from 1 in 1000 to 1 in 10,000, according to the effect desired; while internally it may be administered by giving from 3 to 30 drops of the 1 in 1000 solution. According to Ingals, adrenalin keeps much better if the solution is made with camphor water, cinnamon water and distilled water, to which 8 grains of boric acid is added for each ounce of fluid.

In adrenalin, it would appear, we have an agent of great power and wide utility. Goldstein even goes so far as to say that it is undoubtedly the most valuable therapeutic agent that we have yet added since the advent of cocaine. We should remember, however, how many drugs arrive with a flourish of trumpets, and yet how few of them are to be found in general use a couple of years later. From past experience it seems safe to predict that too much is claimed for adrenalin at the present time, and that more extended trial of it will bring to light defects in it and drawbacks to its use in certain cases. In our hands it has done well in most cases; but occasionally, whether from alteration in the solution, or from some defect in the manner of application, it has not come up to our expectations. In the meantime, we may say that it promises to be a very important addition to our list of therapeutic agents; but time and calm judgment are required to assist in forming a true estimate of its worth. The rapidity with which it acts makes it probable that its general effects cannot last long without frequently repeated doses. So far the only untoward result that we are aware of is recorded by Bloch, who states that a strong application of the powdered suprarenal extract was followed in

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one case by marked œdema of the soft palate and tonsils, with superficial ulcers on the latter. This, he thinks, was the result of an overdose producing strong local vasomotor action and causing venous stagnation. (Lecture by Dr Takamine, Edinburgh, Dec. 3; *Penn. Med. Bull.*, April; *The Laryngoscope*, Sept.; *Therapeutic Gaz.*, Aug. 15, 1901.)

Meetings of Societies

The Edinburgh Medico-Chirurgical Society

THE fourth meeting of the session was held on Wednesday, January 15th—Dr James Andrew, Vice-President, in the chair.

Dr Matheson Cullen moved the suspension of the standing orders for the purpose of drawing attention to the alteration in the Notification of Infectious Diseases in Edinburgh, and with the view to this Society petitioning the Town Council to again place measles in the list of notifiable diseases. Dr Michael Dewar seconded, and as there was no amendment, the chairman declared the standing orders suspended.

Dr Cullen briefly indicated the change in the law which came into force at the beginning of this year. The Notification of Infectious Diseases was introduced into Edinburgh in 1879, powers having been obtained for that purpose in the Edinburgh Municipal and Police Act for that year. In that Act measles was among the notifiable diseases, but when the Imperial Act, The Infectious Diseases (Notification) Act, came into law in 1889, measles was not included in its schedule of diseases compulsorily notifiable. The Imperial Act was devised in order to extend to all Public Health authorities the powers which Edinburgh and some other towns had obtained by local acts. The list of diseases notifiable under it was of course the minimun, but by section 7 power was given to the local authority to add to the number "any infectious disease other than a disease specifically mentioned in this Act." In this respect as well as in some others the Imperial Act is more elastic in its provisions than the Edinburgh Act of 1879, and with a view to taking action with regard to consumption the Town Council in their Provisional Order for 1901, obtained the sanction of Parliament to drop their own Act of 1879 and take up the general Act of 1889. When this order was under discussion in the Town Council there was a general understanding that measles would be added to the diseases notifiable under the Act, but now that the Act was in force there seemed to be an indisposition on the part of the Health Committee to add it to

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the list. Under these circumstances Dr Cullen was of opinion that a resolution passed by the Medico-Chirurgical Society as to the importance of notifying measles would have considerable weight with the Town Council, and strengthen the hands of those who were moving in this direction. He did not propose to enter upon a discussion of the necessity of notification, as he believed it was sufficiently evident to the members, but would content himself with moving that a resolution in the sense indicated be now passed and forwarded to the Town Council.

Although there seemed to be a general concensus of opinion in favour of the resolution, it was thought inadvisable to act in what would seem to be a hurried manner. To this view Dr Harvey Littlejohn and Dr Leslie Mackenzie gave expression, and after some remarks by Drs J. C. Dunlop, Byrom Bramwell, Macgillivray and Webster, it was agreed to refer the subject to the Council of the Society for their consideration as to the best method of treating it.

Dr Byrom Bramwell showed two cases which were good examples of syringo-myelia. The one, a lad aged seventeen, was sent to hospital for atrophy of the small muscles of the hand. He had the ordinary bird-claw hand. His left palpebral fissure was narrower and the pupil was smaller. These two facts, the muscular atrophy in the hand and the narrow eye, were quite pathognomonic of syringo-myelia. He had all the symptoms of this disease; he had incontinence of urine, he shows the dissociated anæsthesia, there being no disturbance of touch or pain, but absolute loss of the power of appreciating the difference between heat and cold. There was great exaggeration of the deep reflexes in the lower limbs, and ankle clonus was present. He was peculiarly stumpy and broad, as in many of these cases.

The other was a woman, aged thirty, admitted because of painless sores on the hands and feet, which have been recurring for a year. She feels touch and pain, but cannot appreciate between heat and cold. She had marked wasting of the biceps and trapezius and muscles of the shoulder girdle, and very marked exaggeration of deep reflexes, including the jaw jerk. Babinski's sign was, strange to say, absent.

Mr Stiles showed a boy after operation for punctured wound of brachial artery opposite the origin of the superior profunda branch. The wound, caused by the spike of a railing, being only half an inch long, had to be enlarged. The basilic vein was found uninjured, and no nerves had been injured. There was no radial pulse. The brachial artery was ligatured above and below the superior profunda, and the latter was also ligatured. Three weeks had now elapsed, and there was still no pulsation in the radial, but the arm was quite well nourished.

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Mr Stiles also showed a girl after second operation, excision, for plexiform angioma of the scalp. As a preliminary operation he had ligatured the feeding arteries, and then treated by electrolysis, but, as it had returned, he applied the rubber tourniquet as recommended by Doyen, and dissected out the whole tumour.

Dr Wm. Elder exhibited a man with transposition of all the thoracic and abdominal viscera.

Dr C. W. MacGillivray showed a case of obstruction of the bowels in a child with suppurating tuberculous retro-peritoneal glands, on whom he had operated with successful result.

Dr Leslie Mackenzie showed a simple form of spray-pump for disinfection, and gave a practical demonstration of its working.

Dr Chalmers Watson showed photographs from a case of cerebral thrombosis in a horse unconscious for 24 hours, followed by complete recovery.

Card Specimens:

Mr Stiles—

1. Portion of brachial artery from patient exhibited.
2. Large (1¾ lbs.) congenital strangulated cyst removed, along with 6 inches of small intestine, from a child aged 1 year and 8 months, who was suffering from acute intestinal obstruction.

Dr Alex. Bruce—

Transverse section of aortic aneurysm.

Mr J. M. Cotterill—

1. Fœtus and sac successfully removed in a case of intra-peritoneal rupture of a tubal gestation.
2. Aneurysm of the posterior ulnar recurrent artery.
3. Semi-lunar cartilages taken from a series of cases of internal derangement of knee-joint.
4. Parts removed in a case of fracture of the sternum with dislocation of the spine.
5. Kidney removed from a case of profuse hæmaturia.

Dr C. W. MacGillivray—

Large papilloma of the rectum.

Drs Gibson and Stewart M'Donald—

1. Spinal cord showing pseudo-tabes syphilitica, with microscopic demonstration.
2. Hæmorrhage into the cusps of the pulmonary valve, with microscopic sections.

Mr Cathcart gave a demonstration on an adaptation by Dr Ramsay Smith of the freezing microtome for tropical climates, and of his rapid method of mounting permanent microscopic sections of fresh tumours.

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Dr Elder read a paper by Mr Miles and himself on a case of tumour of the left pre-frontal lobe removed by operation. He said that in spite of the advances in cerebral surgery, a very small number of the successful operations had been performed for tumours, and that this was due to the fact that very few cerebral tumours, even if they can be accurately diagnosed and located, are removable. There are still many "silent" regions of the brain, lesions in which give rise to no symptoms or to symptoms which are as yet not understood. The patient, a man aged forty-seven, suffered from a tumour of one of these so-called "silent" regions, viz., the left pre-frontal lobe, and his case illustrates the fact, which has been pointed out by several observers, that a tumour or other lesion in this region gives rise to a fairly definite group of symptoms. The pre-frontal lobe was looked upon as a silent region from the fact that electrical stimulation of this part of the brain in monkeys failed to elicit any definite motor reaction. Extirpation of the pre-frontal lobes in monkeys, however, gave rise to a train of symptoms which, as far as they can be compared, closely resemble those exhibited by the patient, as well as by other reported cases. Patient was admitted to hospital on 12th October 1901. Till May he had enjoyed good health. He then began to suffer from pain in the back of the head, in the small of the back, and in the legs. Soon after the pain was referred to the left frontal region, and it subsequently remained localised to that part of the head. Early in his illness the left side of his forehead and face became swollen to such an extent that his left eye was closed, and while this swelling lasted the pain in the head was relieved. His memory became affected, he became emotional, he lost all sense of decency. He suffered from incontinence of urine. His power of sustained attention was much diminished and lack of judgment was a marked feature. There was some degree of dysarthria, but no aphasia. There was paresis in the lower part of the right side of the face and in the right arm.

On the morning of October 15th he was much more stupid and could scarcely be roused. His breathing was sometimes almost stertorous, and had a tendency towards the Cheyne-Stokes type. There was slight rigidity of the right arm. In the evening he had slight difficulty in swallowing and his breathing had become more Cheyne-Stokes-like. The projection over the left frontal eminence was still present, and was distinctly painful and pitted on pressure. There was no optic neuritis.

On 15th October Mr Miles operated. On reflecting the scalp a small area of caries was exposed on the surface of the frontal eminence, and a circle of bone which included the

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carious area was removed with a one-inch trephine. The dura bulged into the trephine-opening and gave evidence of considerable intra-cranial tension. On incising the dura, the brain substance appeared to be normal, but it did not pulsate. On introducing the finger a firm nodular mass could be detected occupying the tip of the frontal lobe. It was easily shelled out without causing any hæmorrhage. The brain pulsated freely as soon as the tumour was removed, and the cavity in the frontal lobe was immediately filled by the brain matter bulging into it. The tumour measured 2 inches by 1½ by 1¼. Histological examination showed it to be composed externally of young connective tissue, which towards the centre gradually passed into caseous material like that found in syphilitic conditions. It was therefore apparently a syphiloma. He was able to be up on 12th November, and has continued well ever since.

The chief points that enabled the authors to arrive at a diagnosis as to the localisation of the lesion may be summarised as follows:—The symptoms undoubtedly pointed to the cerebrum rather than to any other part of the nervous system. The only symptom which might have caused confusion was the apparent want of control over his bladder and rectum. Careful enquiry, however, showed that the loss of control had a higher origin than the spinal cord, that, in fact, the case was one in which, as far as these functions were concerned, the man had been reduced to the animal condition as in advanced dementia. Associated with this symptom was that of loss of modesty, just as is found in cases of dementia where there is a gradual involution of the nervous system beginning in the higher levels. The general condition of the patient and the short duration of the illness excluded dementia. It was not quite so easy to exclude cerebral softening due to embolism or thrombosis, but the history of the case, viz., the gradual onset of the symptoms, pointed to the softening, if present, being in the frontal region and not in any area further back. Cerebral thrombosis or embolism, however, is very rarely limited to the frontal region, and is very much more common in the central regions of the brain, *i.e.* in the areas supplied by the middle cerebral and its terminal branches in the Sylvian fissure. Hæmorrhage was excluded for almost the same reasons as embolism and thrombosis, but especially from the history of the gradual onset, although it was necessary to bear in mind that the rapid increase in the severity of the symptoms the day before the operation might have been due to hæmorrhage from a previously existing tumour. This rapid progress, however, was thought to be more probably due to congestion and œdema, a condition which frequently comes on where there is a tumour

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and often leads to a suddenly fatal issue. Abscess was excluded from the history, the absence of fever and of leucocytosis.

The symptoms which pointed to tumour were the gradual onset and the apparent steady increase and progress of the symptoms from the time the patient gave up work, about a month before admission. These symptoms indicated a gradual increase of intra-cranial tension. The slow and dull cerebration with depression of spirits, together with the slowness of the pulse and the attacks of vomiting without apparent cause, were very suggestive of increased intra-cranial tension.

As to the site of the lesion, there was a symptom which pointed to the left side of the brain, viz., the very slight paresis of the right arm, the more distinct paresis of the right side of the lower part of the face, with dysarthria in speaking, but no aphasia. This symptom pointed to an implication of the fibres passing from the lower part of the Rolandic areas to the internal capsule. The fact that there was no aphasia showed that Broca's convolution was not affected, and as there was much less affection of the arm than of the face, the lesion producing the symptom was almost certainly in the centrum ovale subcortical to the lower part of the Rolandic areas. One other symptom pointed to the left side of the cerebrum. He had a slight but distinct swelling over the left frontal eminence which was painful to pressure, and was slightly soft in the centre. This was felt to be distinctly external to the bone, but as he had a cicatrix over the other side of his forehead where he had had a previous swelling three years before which had been incised, the present one was looked on as specific in character, and therefore might be associated with a gumma on the internal surface of the skull. The facial paresis and the left frontal swelling, apart altogether from his mental symptoms, pointed to the tumour being on the left side. His mental or psychical symptoms were, however, not only confirmatory, but if they had been taken alone would have been sufficient to have justified an operation over the left frontal region. They pointed to loss of inhibition, and are important symptoms in prefrontal lesions. The time has come when we should discard the idea that the prefrontal lobes are "silent regions." Far from being "silent regions," the left prefrontal at least speaks in decided if little understood language as being the seat of faculties the loss or deterioration of which completely changes the character of a man. The best summary of the symptoms of prefrontal tumours is that of Allen Starrs, of New York. The following are his conclusions: "The form of mental disturbance in lesions of the frontal region does not conform to any type of insanity. It is rather to be described as a loss of self-control and a subsequent change of character.

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The mind exercises a constant inhibitory influence upon all action, physical and mental, from the simple restraint on the lower reflexes, such as the action of the sphincters, to the higher control over the complex reflexes, such as emotional impulses and their manifestation in speech and expression. This action of control involves judgment and reason, the highest mental qualities. It seems probable that the processes involved in judgment and reason have for their physical basis the frontal lobes, one of the first manifestations of lesions of which would be an inability to fix the attention, to follow a continuous train of thought, or to conduct intellectual processes. It is this very symptom that was present in one-half of the cases collected. It occurred in all forms of lesions: from injury by foreign bodies, from destruction by abscess, from compression and softening due to the pressure of tumours, and therefore cannot be ascribed to any one form of disease. It did not occur in lesions of other parts of the brain here cited. But its presence in such a large number of these cases warrants the suggestion that in cases of suspected lesion of the frontal lobe, the mental condition of the patient, as shown by his acts of judgment and reason, should be carefully examined, and a change of character or behaviour carefully noted." It would be impossible to have a better description of the symptoms of the present case than this of Starr's, the result of an investigation into the symptoms of frontal lesions.

The removal of the tumour was followed by a rapid disappearance of the dull and depressed symptoms in this case, and the only mental symptom that has been noticed since is what might be described as good cerebration evidenced by slight "forwardness" and sometimes "witticism."

It is a curious fact that the affection which produced the swelling over the frontal bone was not structurally connected with the tumour in the frontal lobe. That tumour had begun in the anterior part of the lobe, and had extended backwards and downwards, pushing the structures before it, until latterly it had implicated the fibres passing from the lower Rolandic areas to the internal capsule, so producing the paresis of the right side of the face and of the arm.

Dr Byrom Bramwell remarked that his experience was in complete conformity with Dr Elder's, viz., that very few intracranial tumours can be treated successfully by surgical means, and that the chief interest in this case consisted in the points of symptomatology made and in the diagnosis.

Mr Cotterill, Dr Logan Turner and Dr Alex Bruce also spoke.

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Glasgow Medico-Chirurgical Society

THE fifth ordinary meeting was held on December 20—Dr W. G. Dun, the President, in the chair.

Dr Arch. Young showed and described an instrument he had adapted for measurements in spinal curvature and allied conditions. It had some resemblance to Miculicz's scoliosometer, but was simpler. It consisted of two limbs of thin Brazilian steel, at right angles to one another, the one shorter than the other. They moved freely on one another, and were graduated in centimetres.

Dr T. K. Monro showed a young woman, aged 22, who had an enlarged, rough, cirrhotic liver, extending to several inches below the costal margin; an enlarged, smooth, and somewhat tender spleen; and albuminuria. She was the subject of congenital syphilis, and was deaf from disease of both ears. The blood showed no features of importance. Hyaline and granular casts occurred in the urine. Dr Monro said he regarded the case as one of syphilitic disease of the liver, with amyloid disease of the spleen and kidneys.

In connection with this subject, Dr Lindsay Steven showed a boy of ten years with enlarged liver and spleen, and greatly emaciated, but with no ascites. At first this was considered a case of liver enlargement, secondary to chronic gastro-intestinal catarrh; but, later on, sugar appeared in the urine, and Dr Steven came to the conclusion that it was a case of interstitial hepatitis of doubtful origin. The father was alcoholic, and the child also took spirits. Dr Alex. Robertson, Dr Workman, and Dr Monro discussed the case, and agreed that it was probably of syphilitic origin.

Dr T. K. Monro next described the case of a sailor who was admitted into the Royal Infirmary with all the typical clinical signs of enteric fever (temperature, rose spots, enlarged spleen, tympanitis, etc.), except that Widal's reaction was not obtained. He died five days later, and at the necropsy presented all the typical lesions of typhoid fever. The bacteriological examination made by Dr Arch. Campbell failed, however, to show any evidence of Eberth's bacillus; but from the blood during life, pure cultures of staphylococcus aureus were got; while *post-mortem*, the spleen and mesenteric glands yielded bacillus coli and staphylococci, and an infarct in the lung staphylococcus aureus. Was this a primary typhoid and secondary staphylococcic infection? If so, Widal's reaction should have been obtained. Or was it a pyæmia simulating enteric? If the latter, it was uncommon.

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Dr Workman said he thought that, in searching for Eberth's bacillus, the material should be put at once through plate culture.

Dr Alex. Ferguson said that staphylococcic infection was not uncommon in typhoid.

Dr Lindsay Steven remarked that it raised the question as to whether typhoid was not caused by more than one organism.

Dr Alex. Robertson and Dr J. S. M'Kendrick also spoke.

Dr Lindsay Steven showed blood-films (prepared by Dr Jas. Scott) from a fatal case of broncho-pneumonia in a child aged 22 months. During life a marked leucocytosis existed (the ratio of white to red cells being 1-25 instead of the normal 1-700), and it was found that the polymorpho-nuclear leucocytes showed peculiar staining reactions, having granules which took up eosin readily like eosinophiles.

The Society met on Jan. 6, 1902, in the new Anatomical Department of the University, at the invitation of Prof. Cleland. There was a large turn-out of the members. After tea and coffee had been served, the members had an opportunity of inspecting the new museum and other additions to the Anatomical Department, which is now a very fine one. A special feature of the evening was the demonstration with the lantern of beautiful micro-photographs, illustrative of certain stages in development, given by Dr James Gemmill, University Lecturer on Embryology.

The Glasgow Obstetrical and Gynæcological Society

THE third meeting of this session was held on Dec. 18, 1901—Dr Robert Jardine, the President, in the chair. There was a good attendance. The item on the billet was a discussion on "The Treatment of Uterine Fibro-myomata."

Dr John Edgar opened the discussion by stating that this was a very common female ailment. He divided treatment into: (1) Expectant.—This simply meant that the patient should be left alone till symptoms showed. He thought it a mistake to operate on every case simply because it *might* become dangerous later on. He would, perhaps, make an exception in the case of pregnancy complicated by a fibroid. Here myomectomy or hysterectomy might be demanded. (2) Medical.—The drugs of use were ergot, hydrastis, calcium chlorides, and bromides. They lessened pain and bleeding, and *might* cause a small diminution in the bulk of the tumour, but the results were often uncertain and generally temporary. They might be tried where the symptoms were moderate, and the growth was

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not increasing in size. (3) Electrical.—Dr Edgar said his experience was that it was only of use where hæmorrhage was the chief symptom and medical means failed. It should not be employed in fibro-cystic tumours and polypoidal growths. (4) Surgical.—This included (*a*) curettage—only palliative for hæmorrhage and leucorrhœa; (*b*) operations aiming at a diminution of the nutrition of the tumour by removal of the appendages or the ligation of vessels. These methods he did not make use of. (*c*) Myomectomy.—The cases suitable were polypi, sessile sub-serous growths, and pedunculated sub-serous fibroids. (*d*) Removal of the uterus in whole or in part, along with the tumour. This included supra-vaginal amputation, and abdominal and vaginal hysterectomy. He liked the supra-vaginal amputation for most cases. The operation was described in detail. Pan-hysterectomy was indicated in cases where there were cervical fibroids which could not be enucleated, or which were associated with tumours of the corpus uteri, or with malignant disease.

Mr R. H. Parry spoke only on surgical treatment. He tried to prevent shock by giving an enema of milk and brandy some hours before operation, and by passing 2-3 pints of saline fluid into the median basilic vein, when the patient was on the table. After the abdomen was opened a pint of saline was poured in. If the case were urgent, after clamping and cutting the broad ligaments, the peritoneal coverings of the uterus were incised, usually high up, and a supra-vaginal amputation was performed, or else a total hysterectomy done. He then ligatured the broad ligaments, and the pelvis was irrigated freely with warm saline. The peritoneum and vaginal walls were included in the sutures closing the vaginal vault. One or two glass tubes, containing iodoform, were placed in the vagina. If the patient could stand a more thorough operation, he passed a double row of catgut sutures to strengthen the pelvic floor from within. The abdominal wound was closed in stages. Whether owing to careful preparation, or the free use of saline solution, he had been struck by the slight disturbance after operation, vomiting being unusually slight or absent, and the recovery often very uneventful.

Dr Samuel Sloan spoke chiefly on the electrical treatment. He said it had been hurt by over-praise. It had not been proved that any electrolytic effect was produced in a fibroid, unless it were sub-mucous. Beneficial effects were obtained in the endometrium from the positive pole, moderate currents being used, while larger currents (100-250 m. a.), acted as a caustic, arresting hæmorrhage. The inter-polar effect was a tonic one on the muscular tissue of the uterus and tumour, on the

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abdominal viscera and sympathetic nerves. Danger might arise from excessive caustic action or from great exhaustion. He gave the indications for electrical treatment.

Dr J. K. Kelly said the real opposition lay between surgical treatment and Apostoli's. He had seen no good from the latter. If interference were needed, the only rational treatment was surgical, based on general surgical principles. One should aim at removing the tumour and leaving the uterus.

Dr W. L. Reid said ergot might be useful between the periods, and bromides when they were on. He had little faith in electrical treatment. He usually removed the tubes and ovaries, and got good results. Hysterectomy was necessary for large tumours.

Aberdeen Medico-Chirurgical Society

A MEETING was held on Thursday, January 9th—Dr D. W. Finlay, President, in the chair. The following clinical cases were shown :—

Dr Howie.—Two cases of *gastro-enterostomy* for pyloric obstruction.

Dr Levack.—A case of *rodent ulcer* treated by X-rays.

Dr G. M. Duncan (for Dr A. W. Mackintosh).—A case of *actinomycosis* of chest wall.

Dr M'Kerron.—Two cases of *tubercular peritonitis.*

Dr Marnoch.—A case of *gastro-enterostomy* for pyloric obstruction. A case of radical operation for *gastric ulcer.* Cases of *coxa vara.* Case of *Didot's operation* for webbed fingers.

Dr Usher.—A case of *Hutchinson's keratitis,* with symmetrical synovitis of knee joints.

Forfarshire Medical Association

THIS Society met on Thursday, December 5th, in University College, Dundee, at 8.30 P.M.—Professor MacEwan, President, in the chair.

Professor Sutherland sent specimens for exhibition at the meeting :—(1) Metastasis in various organs in a case of deciduoma malignum. (2) Hæmorrhagic pericarditis. (3) Papillomatous ovarian cyst with involvement of Fallopian tubes. (4) Tuberculosis of tongue. (5) Actinomycosis, human liver. (6) Cancer of colon ; perforation of gut by fish bone.

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(7) "Rachitic rosary" clavicle in rickets. (8) Aortic and mitral lesions in an infant of four days. (9) Superficial gastric erosion; fatal hæmorrhage. (10) Extreme duodenal stenosis from cicatrisation of ulcer. (11) Recent corpus luteum and several specimens showing types of disease in animals.

Professor Kynoch read a paper on six cases of abdominal section for pelvic affections presenting points of interest:—(1) Case of repeated ectopic pregnancy in the same patient. (2) Repeated ovariotomy; the first operation complicated with pregnancy at fourth month. (3) Repeated ovariotomy within two years. (4) Repeated ovariotomy, the first operation complicated with pleural effusion. (5) Ovariotomy, illustrating the condition of pseudomyxoma of peritoneum. (6) Ovariotomy complicated with scarlatiniform rash. All recovered after operation.

Dr Buist discussed several points brought out in the paper, and spoke of the frequency of the scarlatiniform rash after childbirth. He agreed that such a rash after operation was due to toxæmia.

Dr Halley referred to the frequency of such a rash in children after operation, and mentioned two cases of his own in which the rash appeared after operation.

Dr Whyte referred to the occurrence of a similar rash in some patients after a treatment with opium.

The President spoke in favour of leaving the other ovary in ovariotomies if it appeared healthy, and said he considered the rash which occurred in the puerperium was due to septic absorption.

Dr Halley read a paper on "The surgical treatment of sciatica," which appears on page 123.

Professor Stalker spoke in support of nerve-stretching in certain cases of sciatica. He considered it the most effectual form of counter irritation for so deep a structure as the sciatic nerve.

Dr Foggie spoke of a case in which the adhesions had been excised in addition to nerve-stretching, with most beneficial results.

Dr G. W. Miller also spoke.

The President mentioned cases of improvement after acupuncture, and agreed that nerve-stretching should be adopted earlier in cases where other methods were found to be futile.

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Editorial Notes and News

Editorial Changes.

IN announcing the resignation of Dr William Russell as editor of the Journal, which resignation has been accepted with great regret, the Board wish to express their recognition of the laborious work which has fallen to his share as the first editor of the Journal, and in the name of the proprietors they desire to thank him for labours in which he has not spared himself in the endeavour to make the Journal successfully present the progress of Scottish medicine, and to maintain the best traditions of professional journalism.

To the ability, energy and business capacity of Dr Norman Walker, who has acted as sub-editor, the Journal owes a great deal. In recognition of these services, the Directors have requested him to undertake a share of the editorial responsibilities and have appointed him joint-editor.

The Directors have secured the services of Mr Harold J. Stiles as joint-editor along with Dr Norman Walker. Mr Stiles' distinguished career, his literary ability, and the closeness of his touch with men and things, make the appointment in every way one on which the proprietors and the readers of the Journal may be heartily congratulated.

January 15, 1902.

(*Inserted by instruction of the Board of Directors.*)

The R.A.M.C.

WE are enabled to reprint the statements issued by the Royal Colleges regarding the representation of Scotland on the Advisory Board of the Royal Army Medical Corps:—

Statement by the Council of the Royal College of Physicians of Edinburgh regarding the Representation of Scotland on the Advisory Board of the Royal Army Medical Corps.

THE Council of the Royal College of Physicians have given their careful attention to the Recent Proposals of the Secretary of State for War regarding the Royal Army Medical Corps.

Conscious as they have long been of the unsatisfactory condition of the Military Medical Service, they welcome any attempt to place it upon a better footing. They recognise the intention of the Secretary of State for War in the Constitution

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of the Advisory Board to secure representation of the different divisions of the United Kingdom.

Consideration, however, of the names of those who have been nominated to serve on the Board has forced the Council to the conclusion that Scotland is not adequately represented by the gentleman who appears to have been chosen with that end in view.

The Council consider that the Member nominated to represent Scotland, from whose Medical Schools a large percentage of successful Candidates for the Royal Army Medical Corps is annually supplied, should be one who is in close and intimate relationship with Medical Teaching and Medical Affairs in Scotland.

Without in any way entering upon personal matters, they are constrained to state that the appointment of a gentleman who, although a Scottish graduate, resides and practises medicine in London, is not calculated to give the Medical Profession in Scotland the confidence that is desirable in the work of the Board.—In name and by authority of the Council,

THOMAS R. FRASER, *President.*
R. W. PHILIP, *Secretary.*

EDINBURGH, 10*th December* 1901.

Protest by the Royal College of Surgeons of Edinburgh to the Right Honourable the Secretary of State for War, in respect to the Representation of Scotland on the Advisory Board of the R.A.M.C.

THE Royal College of Surgeons of Edinburgh welcomes the Report of the Expert Committee upon the Royal Army Medical Corps, as an earnest endeavour to improve that department of the army. The College would respectfully submit, however, that certain recommendations in the Report will, it believes, deter men from entering the service.

At this time the College desires only to protest against the present construction of the Advisory Board, inasmuch as, in its opinion, there is no real representative from Scotland upon it.

The College believes that the Secretary of State for War has every desire to attract Scottish diplomates and to induce teachers in Scotland to advise that their students should enter the service, and for this it is imperatively necessary that the representative for Scotland be a man in *active* and *intimate* relationship with medical teaching and organisation in Scotland.—In name and by authority of the Royal College,

J. HALLIDAY CROOM, M.D., *President.*

EDINBURGH, 26*th December* 1901.

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There is no doubt that Mr Brodrick's position in this matter was one of considerable difficulty. The Board meets fortnightly, and there is much committee work to be done. To Dr Galloway personally no objection can possibly be raised. He is a graduate in Arts and Medicine of Aberdeen, a typical Scot, and one with much talent for organisation. It cannot, however, be denied that most of his information regarding Scottish matters would have to be at second hand; and obviously the proper solution of the difficulty is the appointment of an additional member of the Board from among the active teachers in one of the Scottish Schools, who could attend those meetings where his presence was of importance, and who would be enabled to make those suggestions, which must somehow be communicated from Scotland, with a proper sense of responsibility.

We understand that, when further details are issued, a good deal of the unpopularity of the scheme will disappear. There was never any intention of doing away with the privilege of retirement on a pension after twenty years' service, only in future the option of remaining in the service will lie with the authorities and not with the individual, a change which all must admit will tend to greater efficiency.

The examiners will be representative of the different schools and countries.

The examinations are to be almost entirely of such a practical character that it is hoped the necessity for "coaching" will disappear, and the later examinations are to succeed to a period of study-leave on full pay, which very much disarms the objections which have been raised to them.

The Treatment of Early Cases of Insanity.

A MEETING was held on January 21st, in the Royal College of Physicians, the President of the College in the chair, to consider a proposal to establish, in connection with the Royal Infirmary, a department for the treatment of nascent cases of insanity.

We shall print next month an abstract of Sir John Sibbald's statement in favour of the proposal. He was supported by Dr John MacPherson, Dr Clouston, Sir H. Littlejohn and others. Dr Clouston and Sir Henry Littlejohn both dwelt upon the great benefit such a department would confer upon the community at large. The proposal was sympathetically received by a large and representative meeting, and a committee was appointed to take further steps in the matter.

Medical Students.

FROM the Annual Report of the University of Edinburgh, we learn that there are 1403 students matriculated in the Faculty of Medicine, and in

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addition 93 women students attending extra-mural lectures, with a view to graduation at the University. Altogether there are 2929 matriculated students, an increase of 175 on last year. We understand that medicine claims between 20 and 30 of the increase.

There are several changes in the University Court. Professor Rankine takes the place of Prof. Butcher, Mr Lang Todd that of Mr Andrew Mitchell, and Messrs Grant Ogilvy and Campbell Lorimer those of Messrs Hope Finlay and Taylor Innes.

In future the examination in Forensic Medicine and Public Health will resume its old place in the final examination.

In Aberdeen there are 278 students of medicine, as against 288 last year, but the loss appears to be altogether in the later years, for the number registering as medical students shows an actual increase.

In Glasgow there are 588 men, and 55 women students of medicine at the University, 164 matriculated students at Anderson's College, and about 100 at St Mungo's.

The figures of the Edinburgh Extra-Mural School are not yet available, as the returns have not all come in; those already received bring the numbers up to 700, and there are probably about 300 more as yet unaccounted for.

In St Andrews there are 18 students, 4 of them women, and in Dundee 44, 8 of whom are women.

Leith Hospital. DR W. T. RITCHIE has been appointed Pathologist in succession to Dr Shennan, who has resigned, and Mr J. W. Struthers has been appointed Assistant Surgeon; and Dr D. A. Callander, Medical Registrar.

Dinner to Prof. Welsh. ON January 10th, Prof. Welsh was entertained to dinner by a number of friends, previous to his departure for Sydney. Professor Greenfield was in the chair, and gave the toast of the Guest.

There was not a great deal of musical talent at the dinner, but we are enabled to print the words of a song sung by one of the rising medical poets of Edinburgh.

Air—"When the kye comes hame."

COME all ye young pathologists, that wield the knife and saw,
I'll tell to you a secret, the finest o' them a',
What is the greatest bliss that can fill the heart wi' glee?
'Tis to be a braw Professor in a University!

Now, I'll tell ye how ye'll manage to attain this splendid prize,—
Ye'll assist Professor Greenfield, that's to say if ye are wise;
Some lecture extramurally, but oh! it canna be,
They will ne'er become Professors in a University.

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There's Woodhead gone to Cambridge, and there's Muir beside the Clyde,
And Welsh is off to Sydney now, across the ocean wide,
There's Beattie coming on, and Lyon soon you'll see,
Will be roaring at his students in a University.

So your practicals you'll teach, my boys, and talk of waxy spleen,
And your bugs you'll stain wi' thionin, your hands wi' methyl-green,
You'll cut your sections very thin, for there's much you'll hae to see,
If you want to be Professor in a University.

You must write a lot of papers, and you'll find that that's a bore,
It's a job to find a subject that has not been done before;
You pad them out of German books, so a linguist you must be,
If you seek to be Professor in a University.

There's many a post-mortem that you'll have to struggle through,
You've to kill a lot of guinea-pigs, make cultures not a few,
You've to win your testimonials, but the end of it will be,
That they'll make you a Professor in a University.

Here's luck to Welsh, our latest prof., among the kangaroos,
We'll drink his health with three times three, the toast you can't refuse,
He'll think sometimes of those old friends he's left in poverty,
While he's a rich Professor in a University!

Gifts to Dundee. SIR W. O. DALGLEISH has intimated a gift of £10,000 to Dundee University College, £5000 of which is for the extension of the buildings of the medical school.

The Dundee Royal Infirmary has received an anonymous gift of a Finsen lamp for the treatment of lupus. Each hospital which receives this gift seems to feel it its duty to point out that it is one of the earliest to offer this benefit to its patients. As a matter of fact, all the large hospitals are taking steps to have the installation.

Smyth of Aranmore. WE do not recollect an instance where so much sympathy has been aroused with the family of any medical man as with that of the late Dr Smyth of Aranmore. The story of his single-handed devotion to the sufferers in the typhus epidemic has touched the heart of everyone, and sympathy is being shown in a practical manner. Dr Smyth has left a wife and eight children, and practice in Donegal is not of a sort which permits of much saving. Subscription lists have been opened all over the country, and the

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Council of the Edinburgh Branch of the British Medical Association at a recent meeting decided to open a local fund, contributions to which may be sent to the treasurer, Dr James Ritchie, 22 Charlotte Square.

Journal of Obstetrics. WE have received the first number of the new *Journal of Obstetrics and Gynæcology of the British Empire*. It is a stately volume, and contains a most imposing list of editors and collaborators, the latter from all parts of the empire. The editor-in-chief is Mr Alban Doran. Scotland is represented by Dr Berry Hart, Ireland by Dr Kidd, and the provinces by Dr Sinclair of Manchester.

The special claim of the journal is that it is a special journal independent of any society, and it aims at being a complete and impartial record of British work. The work of other nations will be abstracted, but the original contributions are to be entirely British.

Clinical Cases. THE Editors will be glad to receive short notes of cases illustrating points of clinical interest and practical value, similar to those published in this Journal by Drs Gulland, Robertson, and Levack.

New Books and New Editions

Report of the Work of the Edinburgh and East of Scotland South African Hospital. Edited by DAVID WALLACE, C.M.G., F.R.C.S.Ed., and FRANCIS D. BOYD, C.M.G., M.D., F.R.C.P.Ed. Edinburgh: Oliver & Boyd. 1901.

WE confess to a feeling of reticence in reviewing this record of the work done by the Edinburgh and East of Scotland South African Hospital. It was our own Hospital, and those who organised and administered it are our own kith and kin. This makes it specially difficult for us to take a dispassionate and unbiassed view of the work which it accomplished. As Scotsmen we do not wear our hearts on our sleeves, and to praise those of our own family circle is as difficult and unnatural as to blame would be distasteful. We cannot, however, allow our native diffidence to deter us from expressing the satisfaction—we had almost said the pride—we feel as we look through the handsome volume in which the Committee have recorded the doings of those who were selected to represent us in South Africa.

We trust it will be long ere it is again necessary to equip a

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Volunteer Hospital for active service in the field, but we feel sure that if this contingency does arise the volume before us will prove of immense value to those on whom the duty may devolve. It is not a record of perfect forethought and faultless organisation, and we give the Editors full credit for the fact that they have taken no pains to gloss over such mistakes as may have been made, or to shirk responsibility for these mistakes. Want of experience, pressure of time, and the circumstances of the occasion rendered difficulties, miscalculations and errors unavoidable; and to us the wonder is that these difficulties were so successfully overcome, these miscalculations so few, and these errors so insignificant.

The volume is divided into four sections. The first deals with Organisation and Administration, and contains a series of beautiful photographic reproductions from which the reader obtains an excellent impression of the arrangement and appearance of the hospital and its surroundings. In Section II. the Surgical Cases treated in the hospital are reported and illustrated by photographs, radiographs and diagrams. A short Section follows on the Röntgen Ray work, and this is supplemented by an Appendix in which the cases are tabulated. The last section, and the longest, is devoted to the reports of the Medical Cases.

The full, careful and scientific manner in which these records are presented amply testifies to the thorough and zealous way in which the work of the hospital was carried out.

We cannot allow this opportunity to pass without once more expressing our appreciation of the noble response made by the public of Edinburgh and the East of Scotland to the appeal of the Committee who organised this hospital, and of the no less noble way in which the Staff of the hospital — without distinction of rank — performed their arduous duties. The chances of war assigned to them a task which was less attractive and less romantic than some had expected, and all had desired; disease struck down those whose experience, skill and influence could ill be spared; death claimed some whose places could not be filled. The task was faced, the ranks closed, the work done.

Practical Surgery for the General Practitioner. By NICHOLAS SENN, M.D., Ph.D., LL.D., Chicago. Royal 8vo, pp. 1133, with 650 illustrations. London and Philadelphia: W. B. Saunders & Company. 1901.

WITHIN the last few months we have had occasion to notice several works on emergency surgery written for the benefit of

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the general practitioner, and we have now before us another of this class from the pen of Professor Senn of Chicago. That there is room for such a work there can be no doubt. The ordinary students' text-book seldom meets the urgent wants of the practitioner, and the more elaborate works on Surgery are not often at his immediate command. What is wanted, we take it, is a work on the lines of Esmark's "Handbuch" dealing exclusively with the clinical aspects of such surgical conditions as are met with in ordinary civil practice and calling for immediate surgical treatment. Such a work we are convinced would—if we may once more use the hackneyed phrase—meet a long felt want. We have always held Professor Senn's surgical writings in the highest esteem, and we had hoped that the work before us would have supplied this want, but we must confess to a feeling of disappointment that our hopes have not been realised.

In his preface Professor Senn tells us that the contents of his book "are devoted to those sections of surgery that are of special interest to the general practitioner." No sooner, however, does the author begin his task than he loses all sense of perspective, and before we have read four pages we are launched into a consideration of "The Qualifications and Duties of the Military Surgeon" which extends to seven pages, under the headings "Physical Condition," "Mental Qualifications," "Military Spirit," "Punctuality," "Courage," "Personal Habits," etc. It is doubtless of interest to the general practitioner to read that punctuality is a virtue and that it is "the drones that are always behind"; that "patriotism begets heroism"; that "it is easier to preach than to practise"; and that "profanity is prevalent in every camp"; but we fear that he will not thank his author for these copy-book precepts when he is consulting this work in an emergency, and it is just possible that profanity may spread beyond camps.

Nor is this the only occasion on which the subject of Military Surgery is introduced. In Chapter VII. eighty-three pages are devoted to gunshot wounds—almost entirely from the military point of view. Lest we should be misunderstood we may say at once that the substance of these passages is excellent—as we should expect from such an authority as Professor Senn. Our only criticism is that it is out of place in a work like that under review.

The chapters on Fractures and Dislocations appear to us to be really useful. Abdominal surgery bulks largely, and much of the author's work in this field is described at considerable length. Thirteen pages, however, seems to us too much space to devote to the discussion of the different classifications of "Peritonitis," and we had thought that the day was past when

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peritonitis was considered a disease. If it is looked upon as a *symptom* its classification becomes a simple matter.

The subject of hæmorrhage occupies no fewer than seventy-nine pages. In reference to intravenous saline infusion (p. 138) Professor Senn supports the view that the fluid injected should never be at a lower temperature than 120° F., and adds that it has been shown that a temperature of 160° F. is necessary to coagulate any of the albuminoid ingredients of the body. We find it difficult to reconcile this statement with that made on p. 250 that "hot-water at a temperature of 120° to 130° F. coagulates the albumin upon the surface of the wound and in doing so seals the orifices of small vessels."

The chapters on Amputations and Disarticulations are well balanced and should prove useful to the general practitioner, but we cannot allow to go unchallenged the statement "that Syme's amputation through the ankle-joint with excision of the malleoli is an operation no longer entitled to consideration in a modern work on surgery."

The work is profusely illustrated, but many of the drawings are of no educational value, and some of them are anatomically inaccurate.

In leaving this work we cannot resist the feeling that it is not what it professes to be—a handbook of practical surgery for the general practitioner. It contains, if we may say so, portions of several works on surgical subjects, any one of which if completed by the distinguished author would be a valuable contribution to surgical literature. "SCOT."

Surgical Applied Anatomy. By Sir FREDERICK TREVES, K.C.V.O., C.B., F.R.C.S., Sergeant-Surgeon to H.M. the King, Surgeon-in-Ordinary to H.R.H. the Duke of Cornwall and York, Consulting Surgeon to the London Hospital, late Lecturer on Anatomy at the London Hospital. New edition revised by the author with the assistance of ARTHUR KEITH, M.D., F.R.C.S., Lecturer on and Senior Demonstrator of Anatomy at the London Hospital. Illustrated with eighty engravings. Twenty-fourth thousand. Cassell & Company, Limited, London, Paris, New York and Melbourne. 1901.

THE last edition of this work was published nearly ten years ago, though it has been reprinted six times, and the book has undergone careful revision, so that "certain sections have been rewritten, and much new matter has been added." There is no need to discuss fully such a well-known and popular work, and this last edition is likely to be as popular as its predecessors.

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We have always thought that the book was either too full or not full enough. Obviously, on the one hand, a much larger and more detailed book might have been written on the surgical applications of anatomy of much value to the practising surgeon, as, indeed, this, to its own extent, is; and, on the other hand, many paragraphs or portions of paragraphs might have been omitted with the patent advantage that the remainder could have been arranged in a much more attractive form by printing in different types, tabulating in places, and increasing the diagrams and illustrations. The first edition appeared in 1883, and this may account for "relics" which might be expected to have disappeared ere now under the reviser's blue pencil. Why absorb space by even mentioning such things as "Wood's procedure for the radical cure of hernia" (p. 285), "puncture of the bladder per rectum" (p. 394), or Davy's "lever by which the common iliac arteries may be compressed," which discarded invention occupies a complete paragraph (p. 417), ending with the words, "The instrument, however, is of little practical value"? And in describing the appearance of the urethra on section as a transverse slit, the author cautions us that (p. 402) "this fact should be remembered in amputation of the penis by the écraseur." *By the écraseur!*

But though such blemishes are found, this last edition carries all the abounding excellencies of its predecessors, and may be relied on as a trustworthy book of reference by both students and practitioners.

A Manual of Minor Surgery and Bandaging for the use of House Surgeons, Dressers and Junior Practitioners. By CHRISTOPHER HEATH, F.R.C.S., LL.D., Consulting Surgeon to University College Hospital and Emeritus Professor of Clinical Surgery in University College, London. Twelfth edition, revised by BILTON POLLARD, F.R.C.S., Surgeon to University College Hospital, and Teacher of Operative Surgery in University College, London. London: J. & A. Churchill.

THIS old favourite has now reached a twelfth edition, revised by Bilton Pollard. It is a capital book for house surgeons and students, as the information is well arranged, can be readily referred to in any special department, and is trustworthy. But the book is so well known and so deservedly popular that it is unnecessary to criticise it in any detail. The chapters on anæsthetics and asepsis are brought up to date. The following gentle criticisms may be allowed. Under the subject of disinfection the reader learns that nail-brushes should be disinfected by

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being boiled for five minutes, soaked in perchloride, etc.; but the paragraph ends, "Brushes which have been used for the removal of intensely septic material had better be destroyed at once." Why? Boiling will sterilize intensely septic material as thoroughly as "slightly septic." The author holds that the skin should be prepared for twenty-four hours before an operation; this is not in accordance with the results of recent experiments. In the paragraph dealing with the sterilization of catgut, no mention is made of boiling in alcohol in a metal vessel, or of boiling in a saturated solution of sulphate of ammonia, and the same may be said of the sterilizing of catheters and sponges. Under "Scalds of the glottis," *antimony* is still recommended to relieve a child's dyspnœa! "The position of the superficial palmar arch is tolerably well indicated by the middle crease or groove in the skin of the palm"; but this is far from correct, as only the extreme ulnar end of the crease, that is to say *its highest level*, is on the level of the vessel. And surely for rupture of the tendo Achillis, suture has now entirely replaced treatment by position (and what an intolerable position, too), and yet the latter is described as if it were the course usually followed. But there are not many such slips in this useful book.

William Hunter, Anatomist, Obstetrician, Physician (1718-1783). By R. HINGSTON FOX, M.D. Brux., M.R.C.P. Lond. London: H. K. Lewis. 1901. Price 4s. 6d.

THE first part of this book formed the Hunterian Oration on February 10th, 1897. By permission of the Hunterian Society the oration has now been republished with additions, these including notices of Cullen, Smellie and Fothergill, contemporaries and friends of William Hunter, and of Matthew Baillie, his nephew. The book is full of interest, reminding us as it does of the extraordinary amount of original work and independent thinking which was done by the giants in medicine of the eighteenth century. Dr Hingston Fox is to be congratulated on the successful and interesting manner in which he has treated his subject.

"First Aid" to the Injured and Sick—An Ambulance Handbook. By F. J. WARWICK, B.A., M.B.Cantab., etc.; and A. C. TUNSTALL, M.D., F.R.C.S.Ed. Bristol: John Wright & Co. 1901.

THIS little book is well illustrated, and of a convenient size for the pocket. The illustrations are with few exceptions original, and appear to us superior to those usually found in booklets of this description. The text is concise and comprehensive. The closing chapter deals with the transport of sick and injured.

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THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

SIR JOHN SIBBALD ON A PROPOSED PSYCHIATRICAL CLINIQUE FOR EDINBURGH[1]

I THINK it is due to those who have so kindly acceded to my request to come to this meeting, to explain that it has been convened with the concurrence of Dr Clouston and Dr John Macpherson, and that they have agreed to express their views before the close of the meeting on the question which is to occupy our attention. This question is, as you are aware, the need of making adequate provision for the teaching of psychiatry in Edinburgh, and the raising of the question is due at the present time to my distinguished friend Dr John Macpherson, who contributed a valuable article on the subject to the *Scotsman* of 4th July last. This article has not only attracted the attention of many who had not previously had occasion to give their minds to the subject, but has also re-kindled the slumbering interest of others who have long been convinced of its importance. To-day is by no means the first day that the question has been dealt with in the building in which we are now assembled. In the year 1871 Sir Arthur Mitchell in an admirable Morison lecture expressed views almost identical with those that I am about to place before you. I have a note which Dr Clouston will find reviving ancient memories relating to a meeting on 25th November 1869, in this College, which was presided over by Professor Laycock, and at which, with Dr Clouston's support, I moved and carried a resolution that representations should be made to the governing bodies of the Scottish universities, and to the General

[1] The substance of a paper read at a meeting in the Library of the Royal College of Physicians, Edinburgh, on Tuesday, 21st January.

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Medical Council, in favour of making the teaching of insanity a compulsory part of every medical curriculum. It is only comparatively recently, and largely, I understand, owing to the advocacy of Sir Arthur Mitchell, that the resolution has now been given effect to in the Scottish universities. My own direct dealing with the subject dates back to the years 1868-69, when, in the course of an attempt to obtain acceptance in this country of the ideas which under the influence of Professor Griesinger were then taking root in Germany, I wrote and spoke a good deal, expressing views in accordance with the proposals we are to discuss to-day.

Before entering on any detailed consideration of the question of the teaching of insanity, I wish, however, to say a few words in regard to the character of the defect which in our opinion exists in the provision that is made for the treatment of the insane. This defect, it is right to say at once, only relates to one small section of the insane. But we think it would be difficult to exaggerate the importance of that section—consisting, as it does, of the sufferers from mental disorder in its earliest stages; and it is our chief purpose at this meeting to obtain recognition of the fact that these sufferers are, under present arrangements, perhaps the most inadequately provided with hospital treatment of any class of patients. I need scarcely say that the inadequacy is not in any sense the result of premeditated neglect. It has arisen, indeed, in an indirect way, from the exceptional care that the legislature has taken to provide efficient hospital treatment for the insane as a whole, they being the most numerous of the few special classes of patients for whom hospital accommodation is provided compulsorily by the rate-payer. This accommodation, as everyone knows, is given in the institutions called lunatic asylums; but the legislature has judged it necessary so to hedge round with statutory precautions the admission of patients to these institutions, and there are such impediments in the way of their admission due to social considerations, that it is not until a mental disorder has taken indubitable hold of a patient, and not even then in many cases, that the asylum can be resorted to. The statutory precautions, at least as regards all patients except those called "voluntary patients," who are necessarily a very small class, prevent the admission to an asylum in Scotland of every person for whom

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medical certificates according to a prescribed form, and a Sheriff's order, cannot be obtained, and similar precautions exist in England and Ireland. The impediment arising from social considerations is perhaps the most important of all.

It is always with great reluctance and only as a last resort that a patient is placed in an asylum ; and it must be admitted that this reluctance is reasonable. It does not now result, as it once did, from the influence of superstitious ideas as to the nature of insanity ; for these ideas have nearly disappeared. Nor does it often result from asylums being regarded as houses of terror, as in too many instances they were justly regarded at a period not very remote. So far as the reluctance is justifiable, and so far as it has much practical effect, it rests on the fact that a person who has once been an inmate of an asylum is regarded, though often quite erroneously, as unreliable for sound judgment and prudent conduct, and is henceforth seriously handicapped in the battle of life. For these two reasons then, the legal and the social, there is a large number of the persons suffering from mental disorder who are prevented from being treated in asylums at the stage of the disorder when treatment is not only most needed but also most likely to be effective in promoting recovery. As I have already indicated, this exclusion from asylums means as regards these patients their exclusion from hospital treatment of any kind. For although a case occasionally finds its way into a general hospital, they are as a class without any available opportunity of hospital treatment. We wish therefore to represent to you that it is urgently necessary that such an opportunity should be afforded them, and we wish to suggest to you that the only satisfactory way of providing this is by establishing wards for such cases in general hospitals. In the case of Edinburgh, therefore, the case can only be met by providing such wards in the Royal Infirmary. It is evident at once that nothing of the character of a lunatic asylum would do. Any establishment into which only insane persons are received will be shunned, as asylums are at present, and for the same reason. We therefore think that there should be as little as possible to make the wards we ask for, distinguishable from the ordinary medical wards ; and we think that every care should be taken to prevent its being a necessary consequence of residence in these wards that the

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patient should be ever afterwards stamped as a lunatic. It is surely of the first importance that nothing should be done unnecessarily to prejudice injuriously the future of the patients. In pursuance of this object nothing should be done to emphasise, but rather everything should be done to obliterate, the line of demarcation which has too long been drawn between patients suffering from what are called bodily diseases and patients suffering from what are called mental diseases, or to state it more correctly, between those whose bodily illness has affected their minds and those whose bodily illness has left the mind in its normal condition. After all, the distinction that has been made is based on imagination more than on fact: for there are few diseases in which both the intellectual and the emotional operations are not more or less modified or impaired: and the diseases which we call mental are only those in which this modification or impairment is so great and so persistent as to interfere seriously with the fitness of a patient for responsible action. We should therefore desire that these wards if they were established should not be reserved exclusively for patients who would in this sense be called insane.

We should, for example, desire that the wards should provide for the treatment of such affections as neurasthenias, both when associated with mental depression and when free from that complication. I must refrain, however, from going into details, and be content to indicate broadly the object at which we aim. It is sufficient for my purpose if I have made it clear that the character of the cases should be such that it would be fully recognised that to be an inmate of the wards did not necessarily imply the existence of insanity. A most important class of cases would be those in which no insanity existed, but in which, if suitable treatment were not adopted, there was serious danger of its being developed. The wards would in fact be, from our point of view, not exclusively for the cure of mental disease but also for its prevention.

We should hope also, if it were understood by the public that special attention was given in the Infirmary to the class of cases just mentioned, there might be established in connection with the proposed wards a useful "out-patient" department in which patients suffering from mental failure or exhaustion of any of the mental troubles which result from unsoundness

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of health might receive trustworthy and helpful advice and assistance.

If our contention is accepted that there is urgent need for something being done in the direction I have endeavoured to indicate, the main object of the present meeting will have been attained. We do not lose sight of the fact that to provide what we recommend may involve additional building. This, as well as some other aspects of the question, will require more consideration than can be given to it at a preliminary meeting, and I therefore refrain from opening such questions.

I have placed in the forefront on this occasion the service which such wards would render to the public generally in providing for the curative treatment of an important class of patients. But the need for such wards in the interest of medical education is almost as urgent. I expect to have an opportunity at an early meeting of the Medico-Chirurgical Society to press this view upon the minds of my professional brethren; but I may indicate in a few words the nature of the defects which would be remedied by the establishment of the wards. The present clinical teaching of the nature of insanity and how to treat it, is given at too great a distance from the locality where the student does the rest of his work; and the most important part of the teaching cannot be fully illustrated by cases. In Edinburgh, university students have to go for this clinical teaching to Morningside, and extra-mural students have to go to Larbert; and thus, even in the most favourable example, they spend fully one half of their time going to and returning from the asylum. This defect would be remedied if they could receive their teaching in the Infirmary. But the other defect is the more important of the two. The teaching is not the teaching that is wanted. The mass of medical students are destined to be general practitioners—not asylum doctors—and the patients whom the student sees at Morningside or Larbert are all in the condition which requires to be dealt with by the asylum doctor, and have passed out of the condition which had to be dealt with by the general practitioner. A skilful teacher will no doubt be able to draw lessons even from these cases, which will be instructive to the general practitioner; but none the less is it the fact that by far the most instructive cases for him are those which have not

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reached the asylum. It is evident therefore that the wards we propose would be of immense value to the student and to the clinical teacher. The object of the general practitioner in a case of mental disorder will in most cases be to keep the patient from requiring to be sent to an asylum, and the illustrative cases for learning how to do this would be found in these wards. It is needless to say how much the clinical teacher would value cases in the early stages of the disorder, not only for purposes of teaching but also for careful study.

It is not unimportant when considering the question of clinical teaching to recognise that in the United Kingdom we are a long way behind the chief Continental countries. Germany has in a special manner made great advances in providing wards for mental diseases in the immediate neighbourhood of medical schools. These advances were all initiated by Professor Griesinger during the three years in which, before his lamented death in 1868, he filled the Chair of Nervous and Mental Diseases in the University of Berlin. Previous to Griesinger's movement there was no clinical instruction connected with any of the German Universities except four, and in these in a very imperfect form. At first his action met with great opposition; but now there is clinical instruction in the immediate neighbourhood of every one of the twenty Universities, the last having been the University of Kiel, where the clinique was opened in 1900. In France things have not progressed so far as in Germany, but they are going in the same direction, and the value of the impulse given by Griesinger is recognised there. "Bitterly assailed," says M. Paul Sérieux, one of the best informed of French alienists, in a recent article, "as Griesinger's views were by the majority of the alienists of his own country, who characterised them as disastrous innovations, these views have triumphed in the end, and it is certainly to that great reformer that the credit is due for the brilliant progress that German psychiatry has made."

There are legal and administrative, as well as economical questions that must be fully considered before any action can be taken in the direction we propose, and these no doubt involve some difficulties that must be dealt with. I am satisfied, however, that none of these difficulties are insuperable, and I trust that, with the example of Germany before us,

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the views we advocate will be given effect to, and that our pleading will not be so fruitless as were my vain efforts of thirty-three years ago.

THE OCCURRENCE OF MILK-SUGAR IN THE URINE OF NURSING WOMEN, WITH A NOTE ON THE BEST MEANS FOR ITS DIFFERENTIATION FROM GRAPE-SUGAR[1]

By CARSTAIRS DOUGLAS, M.D., B.Sc., F.R.S. (Edin.), F.F.P. & S. (Glasg.),

Professor of Medical Jurisprudence and Hygiene, Anderson's College Medical School, and Director of the West of Scotland Clinical Research Laboratory, Glasgow

DURING the past few years it has happened that on several occasions I have been asked to examine the urines of nursing women and to determine whether the reduction of Fehling's solution which these occasioned was due to grape- or to milk-sugar. For it is obviously a very different matter alike as regards diagnosis, prognosis and treatment, if the sugar that is present is the harmless lactose and not the more ominous glucose. A surgeon or gynæcologist about to operate who finds that his patient's urine contains sugar, will naturally feel much relieved if his mind can be set at rest upon this point; and the physician, under similar circumstances, will take a totally different line in his dietetic and medicinal treatment according to the class to which the foreign element belongs.

I have accordingly given this matter some attention during this year, and have made a series of observations on patients in the Glasgow Maternity Hospital, partly to determine whether lactosuria were really common among nursing women, and partly to ascertain whether there were any reliable tests which would enable one to determine positively between grape- and milk-sugar in urine.

This is not a new matter, for the occurrence of milk-sugar in the urine of mothers has been noted for a good many years past. One of the earliest papers on this subject is that of De

[1] Read at a meeting of the Glasgow Obstetrical and Gynæcological Society held on Nov. 27, 1901.

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Sinéty in Maly's *Jahrbericht für Thierchemie* for 1874, and since then communications have appeared from time to time by Hempel,[1] Hofmeister,[2] Johannovsky,[3] Kaltenbach,[4] Ney,[5] and others. But when a matter of this kind crops up, and one is asked to give an opinion upon it, it is always a great advantage if that opinion can be based on personal observation; and accordingly, what I now wish to communicate to you briefly, is what I myself found to be the case.

1. The number of cases examined was 56, and on these I made 91 observations. Most of the cases were primiparæ. Of the 56, 48 (or 85 per cent.) showed the presence of milk-sugar in the urine in greater or less degree, while it was not found in 8 cases (or 15 per cent.). But when these 8 cases are looked into a little more closely, it is found that 2 of them were pregnant women (sixth and eighth months respectively), while 3 of them were mothers who never nursed at all. Of the remaining 3, one (a ii-para) was examined only once and on the first day of the puerperium, so that there remain only 2 cases (or 3·5 per cent.) of the total where lactosuria did not occur after full lactation had been established. We may therefore conclude that nursing mothers usually secrete a urine at least in the later days of the puerperium in which milk-sugar occurs in greater or less amount.

Of the cases examined in hospital, most of the observations were made between the third and the seventh day after delivery. Of 4 undelivered cases, 2 revealed no sugar (sixth and eighth months respectively), while 2 at full time showed traces.

In at least 1 case, a v-para, sugar was found on four different occasions though the woman was not nursing; and it was also found where a woman had been nursing and lactosuria was present, that when suckling was stopped (*e.g.* on account of the child's death) the urine might show evidence of milk-sugar for four or five days more, the quantity, however, always growing steadily less. This is, I think, a point of some importance, for women not unfrequently come into a general hospital for, let us say, some surgical purpose, leaving their babies at home, and their urine, for several days after admission, is found to contain sugar. This might be puzzling, and the prognosis accorded the patient more serious, did we not bear in mind the fact that after such a person has ceased to nurse,

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milk-sugar will present itself in the urine for some time. We may therefore say that at least in the early days of nursing and after full lactation has been established, the majority of mothers exhibit lactosuria and secrete a urine that readily reduces Fehling's solution. There is still another circumstance in which this should be kept in mind, and that is when, on examining a female applicant for life-insurance, we find sugar in the urine. It is obvious that a great injustice would be done to the proposer if she were rejected or the premium loaded simply because the examiner had not taken the pains to find out whether or not she was nursing at the time.

2. *The tests for lactose in urine.*—Lactose or milk-sugar has the formula $C_{12}H_{22}O_{11}$ and is one of the group termed "Disaccharides" by physiological chemists, because it is formed as it were by the combination of *two* molecules of glucose less one molecule of water, thus—

$$2C_6H_{12}O_6 = C_{12}H_{22}O_{11} + H_2O.$$

If one take, say, a 1 per cent. solution of milk-sugar in water, it will be found that it reacts quite well to Fehling's and Trommer's tests, though it may need a little more prolonged boiling than in the case of grape-sugar, as the reducing power of the former to the latter is only as 7 in 10. Milk-sugar also reacts well with nitro-propol (ortho-nitro-phenyl-propolic acid), a recently proposed test for sugar in urine which I have looked into pretty fully and on which I recently communicated a paper[6] to the Glasgow Medico-Chirurgical Society based on over 200 observations. By these methods we can easily show that sugar is present. When the examinations are made during the puerperium and catheter specimens are not available, the presence of blood, epithelium, or other elements of the lochial discharge may give rise to fallacy, especially with the copper tests. I then usually adopt the procedure advocated by Allen,[7] which takes up little time and which I have found very satisfactory. His plan is to treat the urine in neutral or faintly acid solution with cupric acetate, whereby a precipitate of xanthin bodies, uric acid, colouring matters, and albumen is produced; a partial precipitate of phosphates and creatinin also occurs. The filtered fluid does quite well for Fehling's test. To put this procedure into effect take 7 c.cm. of urine, boil in

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a test-tube, and add at once 5 c.cm. of the cupric sulphate solution used in preparing Fehling's reagent. A precipitate occurs; when the tube has cooled, add 2 c.cm. of a saturated solution of sodium acetate, containing a trace of free acetic acid. A further precipitate now occurs, and, on filtering, a greenish-blue solution is obtained; to this are added 5 c.cm. of the other part of Fehling's test (the alkaline tartrate solution) and the whole is boiled for 15 seconds. Cuprous oxide at once separates as an orange-yellow precipitate in the presence of one part of sugar in five hundred, or less. This method of Allan's I can cordially recommend.

These tests are all good, and by their aid we can show, as I have stated, that sugar is present, but when it comes to the question as to whether glucose or lactose is the reducing agent we are confronted by a less easily solved problem.

Now there is a very delicate and certain reaction for the sugars called the phenyl-hydrazine test, which I daresay all of you know.[8] It consists in heating a little of the suspected fluid with the hydro-chloride of phenyl-hydrazine and some sodium acetate. The heating must be prolonged (30 to 45 minutes), and should be done by placing the prepared test-tube in a water bath of boiling water. The test depends on the formation of a crystalline body called an osazone, which appears as a deep-yellow sediment when the tube is allowed to cool. Under the microscope the deposit has the form of delicate lemon-tinted needles arranged in bundles or radiating groups. Grape-sugar, milk-sugar, and maltose each forms an osazone of its own, distinguishable from one another by their crystalline form and their melting-point.

This test, when positive, is an absolute test of a sugar, because no substances except certain sugars can produce an osazone, and it can be readily applied clinically. Cane-sugar, I may mention, does not respond to it.

Now grape-sugar in urine answers very well to this test, and we can therefore say with great definiteness whether or not a urine contains that kind of sugar; but unfortunately milk-sugar in urine does not respond to it at all readily, although a watery solution of lactose does. Indeed I may say that though I have tried this test many times with urines containing milk-sugar, I have never yet succeeded in obtaining the crystalline

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lactosazone. So that this reaction, excellent as it is for grape-sugar, does not enable us to say positively that milk-sugar is present.

What about the yeast test? We all know that this is very admirable for determining whether or not grape-sugar occurs in urine (provided the amount be not too small), but milk-sugar itself does not ferment as such; under the prolonged action of yeast, however, it is inverted into glucose and galactose, and after that alcohol and carbonic acid gas are formed. I may state that I have only once in cases of lactosuria been able to obtain a positive result with the fermentation test, however prolonged the action of the yeast may have been. It is well known that a similar inversion may be determined in lactose by boiling it with a dilute mineral acid; it then undergoes hydrolysis and we obtain glucose and galactose thus—

$$C_{12}H_{22}O_{11} + H_2O = C_6H_{12}O_6 + C_6H_{12}O_6.$$
Lactose Glucose Galactose.

Ruizard accordingly has suggested the adoption of this procedure for the detection of milk-sugar (*Berl. chem. Berichte*, xxix. 147, 1896). He says that one might boil the suspected fluid with dilute hydrochloric acid, and then apply the phenyl-hydrazine test. I have tried this, and must confess that, in my hands at least, it has not answered well.

Another plan suggested is to hydrolyse the milk-sugar and then test with Barfoed's reagent. I stated already that the cupric tartrate of Fehling's solution was pretty readily attacked by milk-sugar, but a solution of cupric acetate, slightly acidulated with acetic acid, is reduced by grape-sugar and *not* by milk-sugar. Such a solution is termed Barfoed's reagent, and Ruizard says that if you get a urine which will not reduce the reagent at first, but will after boiling with dilute hydrochloric acid, you may conclude that it at first contained milk-sugar. I cannot say that I have found this test answer at all well.

The only other test I know of to distinguish milk- from grape-sugar is Rubner's.[9] It depends upon the colour-change produced when a solution of the sugar is boiled with solid lead acetate, and ammonia is added. Salkowski[10] recommends that to 5 c.cm. of the solution, 4 grms. of solid neutral lead acetate should be added, and the whole boiled for two minutes;

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ammonia is then to be added freely, and the mixture heated once more, when a deep red colour appears in the case of milk-sugar, and at length a red precipitate falls. Grape-sugar under similar circumstances yields a chamois-yellow fluid. My experience has been that while quite distinctive colours can be obtained in the case of pure aqueous solutions, the results are not good when we deal with milk-sugar in urine, especially as the amount present is often very small. So you see that there appears to be no very good positive test for milk-sugar in urine. To give a concrete example: On 14th September 1901, I examined the urine of Mrs O'B., a multipara, in the fourth day of the puerperium, and nursing regularly, the case being one of fairly well-marked lactosuria. The following are the results of my trials to ascertain positively whether milk- or grape-sugar were present:—

1. Trommer's test gave a positive reaction, although not very well marked.

2. Fehling's test gave similar results.

3. Phenyl-hydrazine, after forty minutes' heating, was negative, no crystals being obtained.

4. Barfoed's reagent (acetate of copper) was negative.

5. Rubner's test gave a *café-au-lait* coloration, and exactly the same with grape-sugar.

6. Ruizard's test.—(*a*) After boiling 60 c.cm. urine with 6 c.cm. of 10 per cent. H.Cl. no reaction was yielded with copper acetate (therefore unsatisfactory); (*b*) the hydrolised urine treated for forty minutes with phenyl-hydrazine and filtered hot, gave a yellow and amorphous deposit on the filter-paper, and a yellow filtrate which on cooling deposited small, roundish, spinous crystals, probably galactosazone. This test was therefore positive.

7. The Yeast test yielded a small bubble or two in six hours; 2 to 3 c.cm. of gas in eighteen hours; and 3 to 4 c.cm. in twenty-four hours.

8. Nitro-propol gave a positive reaction.

In this case which, as you see, was examined very fully, the only really positive test was the second part of Ruizard's, where crystals of galactosazone were obtained. As I have already stated, this test is not always so satisfactory in its working. Had it been negative in the above instance, I could

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not have said positively that milk-sugar was present, but there would have been a very strong probability that this was the case, for two reasons: (1) the urine did not ferment with yeast till eighteen hours had passed; and (2) the untreated urine did not react to phenyl-hydrazine. Now there must have been a sugar there since the urine did ferment, and it could not have been grape-sugar, else it would have been shown by the phenyl-hydrazine test, which I have satisfied myself is at least twice as delicate as the fermentation one. The result is arrived at, as you see, rather by a process of exclusion than by any positive test, and I have generally been in the habit of saying that if you have a urine which responds fairly well to Fehling's test (having excluded fallacies here), but does not yield any crystals with phenyl-hydrazine, and does not ferment (except very slowly) with yeast, you may be practically certain that it is milk-sugar which it contains. This opinion I formed for myself, and I found out later that it was the same as that expressed by v. Jaksch.[11] In the late autumn I began working at this matter with a view to establishing some really positive and practicable test for this condition, but as yet my efforts, I regret to say, have not met with success.

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ANARCHISM: THE INSANITY OF DELUSIVE EXPEDIENT

A Note on the Case of Leon F. Czolgosz

By GEORGE R. WILSON, M.D.

IN the *Medical Record* (New York) of 4th January 1902, Dr Macdonald presents an admirable account of the assassin of President McKinley—his trial, execution, and mental status; and Mr Spitzka contributes a very complete report on the autopsy.

Dr Macdonald and those who acted with him found no evidence of insanity in Czolgosz, and Mr Spitzka came to the conclusion that, so far as naked eye appearances were concerned, this murderer was in sound health and of normal cerebral structure.

Czolgosz was twenty-eight years of age, five feet seven and a half inches in height, about 140 lbs. in weight, "rather good-looking," and with regular features. Absolutely no stigmata of degeneration could be discovered. The pulse, temperature and skin were normal, as also were the special senses, knee-reflexes, co-ordinating power, and the sensory and motor functions. On his own statement he had never suffered any serious illness nor been the subject of any nervous complaint, and knew of no insanity in his family. Mr Spitzka's report confirms the view that this was an exceptionally healthy young man of good, normal development. The brain weighed, when stripped and drained, a trifle less than 50 oz.

Five experts were employed and they were unanimous in their opinion. The prisoner was frequently interviewed, and the report which is in effect a series of detailed negations, is very convincing. There was no sort of delusion, no morbid vanity or suspicion or idea of a special mission; in short, "not the slightest evidence of mental disease, defect, or degeneracy."

"On the contrary, everything in his history as shown by his conduct and declaration, points to the existence in him of the social disease, anarchy, of which he was a victim."

Czolgosz had renounced Romanism because he had ceased to derive benefit from the Church, and no longer believed in it. At the trial he pleaded "guilty," and would not answer questions, as he did not believe in government or law. "I done my duty," said he; "I don't believe in voting; it is against my principles. I am an Anarchist." And again, "I don't believe in the Republican form of government, and I don't believe we should have any rulers. I had that idea when I shot the President, and that

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is why I was there." Lastly, "I am not afraid to die; we all have to die some time."

Notwithstanding the peculiarity of these views there is no doubt that, on the evidence obtained, any jury of experts would concur with Dr Macdonald and his colleagues in the view that Czolgosz was sane and responsible. It may, however, be instructive to consider what is the psychological significance of "this social disease, Anarchy," and whether we are quite justified in still regarding it as consistent with sanity. Anarchists are responsible, as a rule; they act deliberately and as the conscious result of their beliefs, and they are capable of an intelligent appreciation of society's necessary reprisals; no one is likely to propose that the State should provide for them and shield them. It would, however, be salutary and sound for our profession and the public to realise that the anarchist type of mind is diseased.

It is impossible to enlarge here upon the normal features of the anarchist intelligence; it is in most respects probably above the average of those of its class in society. Let us note its characteristic defects. Of these, the fundamental infirmity is a sense of injustice and oppression; civilised institutions, the anarchist says, are wrong and tyrannical and unfair; they do not give us a good chance. That is obviously the weakling's point of view; anarchism is the creed and practice of those who find the conditions of life too hard for them, and who have not courage enough to accept the situation nor the patience to redeem it. We might work out this primary conception with profit, but it is sufficient to say that the mind whose outlook on the world in general is such as to regard accepted opinions and procedure and institutions as systematised engines of cruelty and partiality, is of a nature very nearly allied to that of the lunatic who develops a delusion of persecution. We must note also an excessive tenacity of belief in the anarchist; the creed which he professes takes possession of him; argument is useless, he is not open to correction. This is the kind of credibility which has been claimed by some for what are called self-evident truths; and the doctrine that some truths require no evidence, but carry with them their own and immediate proof, is a striking comment upon the mind which accepts them—a mind which jumps at a proposition, swallows it, and is incapable of disgorging it. That factor is also conspicuous in insane delusion—a tenacity of belief to be explained by the incapacity of the mnid for real controversy. It would seem to be due to physical conditions in the mechanisms of opinion comparable to what is implied in impulsive acts. And this morbid process is epidemic in a certain sense — not that the

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tendency to epileptiform belief is contagious, but that the malcontent minds which anarchism selects do not usually arrive at the idea by independent thinking, but find it satisfying when someone presents it to them. It is, however, in the practical aspect of anarchism that disease is most obvious. The anarchist's malady makes the idea of an evolution impossible; the condemned institutions cannot be improved, they must be overthrown. There are two alternatives—either that the ninety-nine who believe in those institutions will suddenly be converted and agree to make an end of them, or that the one will overpower the ninety-nine; and it is hard to say which of the two miracles it is more insane to look for. Most of all is it important to observe that this aberration cannot exist without eventually finding expression in futile expedients of a criminal nature. Anarchism has both a logical and an organic relation with violence, and must be expected to transgress moral laws as well as the laws of states. The destructive cruelty of the dynamitard or the assassin is inevitable so long as bodies of men and women hold anarchist doctrine. Its insanity is obvious in its irrelevance—the ineptitude of the act in relation to the end desired. But it is a vice and a disease in act which is shared in feeling and in thinking by those who approve such deeds, and by those who, even when they overtly disapprove of violence, admit the suggestion that the world is all wrong. Anarchism, then, is a disease which besets a mind too weak to overcome difficulties, unduly amenable to suggestion, and prone to futile expedients; and it depends for its existence upon intercourse with like minds. In all probability if it were recognised as a disease it would materially diminish.

OBSERVATIONS ON CASES OF PERNICIOUS ANÆMIA, WITH SPECIAL REFERENCE TO THE BLOOD CHANGES

Part of a Thesis presented to the University of Edinburgh

By ALEXANDER GOODALL, M.D., M.R.C.P.E.,
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CASE VII. A man, aged 73, who had been a butler, was admitted to the Royal Infirmary under Dr James's charge on 2nd July 1900. He complained of weakness, constipation and epistaxis. His family history was good and his circumstances

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had been comfortable. He had always enjoyed good health till three or four months before his admission, when it was noticed that he was getting weaker, and he began to suffer from bleeding at the nose. The bleeding had never been in great amount but had occurred at pretty frequent intervals.

The weakness had greatly increased, and for seven weeks before admission he had been confined to bed.

On examination there was marked pallor and the face showed a slight lemon yellow tint. There was some emaciation.

Alimentary System.—The lips and gums were pale. The tongue was dry, showed a slight coating of brown fur, and was indented by the teeth. The bowels were constipated.

Hæmopoietic System.—There was no enlargement of lymphatic glands or of the spleen.

The blood was very pale in colour, and coagulated slowly. Fibrin was diminished and rouleaux formation was very slight.

There was well marked, but not extreme poikilocytosis. The corpuscles showed great diversity in size, the average being much increased. Nucleated red cells were present. There were also a few myelocytes. The red cells numbered 800,000 per c.mm. The hæmoglobin was 24 per cent.

Circulatory System.—The heart did not seem enlarged. There was a long, soft murmur accompanying the mitral systolic sound.

Urinary System.—The urine was amber in colour, acid, and its sp. gr. was 1015.

The spectroscope showed the presence of urobilin.

Nervous System.—Patient's mental powers were below par. Although he could answer questions concerning his symptoms, he was practically a dement. The fundus oculi on each side looked healthy.

Treatment.—Patient was treated with arsenic in increasing doses. On 6th July his temperature showed a slight rise and an injection of 1 c.c. of antistreptococcus serum was given. No reaction followed.

During September salol was given in addition to the arsenic. Retinal hæmorrhages were now noticed.

Patient got gradually weaker and died on 25th September 1900.

TABLE XV.

Date.	Red Cells.	White Cells.	Hb.%	Colour Index.
July 2nd	800,000	—	24	1·5
„ 14th	1,274,400	6250	30	1·2
„ 25th	1,360,000	3125	30	1·1
Sep. 25th	937,500	—	20	1·0

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TABLE XVI.

Date.	Per Cent.					Per 1000 White Cells.		
	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Myelo-cytes.	Baso-philes.	Megalo-blasts.	Normo-blasts.	Micro-blasts.
July 2nd	67	31	·8	·4	·1	4	3	0
„ 14th	62	35	2	·1	·2	14	11	0
„ 25th	56	40	3	·5	0	10	80	0
Sep. 25th	43	56	0	·5	0	205	120	25

On 27th September, a *post-mortem* examination was made by Dr Welsh.

There was diffuse fatty degeneration of the heart muscle, with thickening of the endocardium. The liver was dark brown in colour, and showed advanced fatty degeneration. There was a well marked iron reaction, especially at the periphery of the lobules.

The dura mater was greatly thickened and œdematous, and firmly adherent to the skull. The internal carotids were much thickened.

The mucous membrane of the stomach and intestine showed no naked-eye change.

The bone marrow of the femur was of a diffuse crimson colour, and the medullary cavity was enlarged. Microscopically, the bone marrow showed a very large number of nucleated red cells of various size. Many of the red cells showed karyokinesis.

The main interest of this case lay in the question of diagnosis. Against the probability of the case being pernicious anæmia were the emaciation, the high percentage of polymorphonuclear cells, and the fact that normoblasts appeared as numerous as megaloblasts in looking over only one or two films. Really "typical" megaloblasts were very scanty.

Cancer of the stomach was suggested, but careful examination failed to reveal any such condition.

On the other hand, the high colour index and the decreasing percentage of polymorphonuclear leucocytes were in favour of pernicious anæmia, which diagnosis was made during life, and confirmed by the autopsy.

The mental condition was fully accounted for at the "sectio."

The great thickening of the dura was probably due to the combination of old age and anæmia.

The next two are well marked cases of pernicious anæmia in which I have had the opportunity of examining the blood, but have not the notes of the clinical details.

Case VIII. A man over 50. The blood was pale and

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unusually fluid. It coagulated slowly. Fibrin was diminished. Rouleaux formation was slight. Plates were diminished.

The average size of the red cells was markedly enlarged. Poikilocytosis was well marked.

In stained films, degenerative changes in the red cells were marked. Megaloblasts were numerous.

TABLE XVII.

Date.	Red Cells	White Cells	Hb. %	Colour Index.
1900				
June 3rd	1,112,000	6250	30	1·3
„ 8th	1,020,000	6800	35	1·7
„ 22nd	924,000	6406	33	1·8

TABLE XVIII.

	Per Cent.				Per 1000 White Cells.		
Date.	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Myelo-cytes.	Megalo-blasts.	Normo-blasts.	Micro-blasts.
June 3rd	37	58	4	1	8	0	—
„ 8th	34	65	·2	—	2	—	1
„ 22nd	35	63	1	·5	2	10	—

Case IX. A woman over 60. The temperature was 103° F. when the blood was examined. It was very pale, and the corpuscles seemed almost at once to form a precipitate in the plasma.

Coagulation was slow. The red cells showed an increase in their average size, poikilocytosis and marked polychromatophilia and fissuring.

TABLE XIX.

Date.	Red Cells.	White Cells.	Hb. %	Colour Index.
July 10th	680,000	5625	32	1·1

TABLE XX.

	Per Cent.					Per 1000 Whites.		
Date.	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Baso-philes.	Myelo-cytes.	Megalo-blasts.	Normo-blasts.	Micro-blasts.
1900.								
July 10th	78	21	·2	·2	·6	10	2	2

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CASE X. A married woman, aged 48, residing in Edinburgh, was seen on September 4th, 1900.

She complained of breathlessness, weakness, yellow colour of the skin, and a slight cough.

Previous Illnesses.—She had smallpox twenty-nine years ago. Fourteen years ago she had severe hæmorrhage following abortion.

On several occasions she has had illnesses similar to her present one. The first was ten years ago. At that time she was six months in bed. The second was six years ago and the third only five months ago. During the last attack she became very yellow, and was treated with arsenic. She rapidly improved, and did not continue taking her medicine although advised to do so.

Present Illness.—About a fortnight ago, patient began to feel weak and breathless and her skin became yellow.

Present Condition.—Patient is well developed. The muscles are soft, but adipose tissue is plentiful. There is a slight lemon yellow tinge on the skin and conjunctivæ.

The temperature has never been found above 98·6.

Alimentary System.—The lips and gums are pale. The teeth are very bad.

The tongue is moist and clean. Bowels regular.

Hæmopoietic.—The spleen is not enlarged. There are no enlarged glands.

The blood looks pale and streaky. Fibrin is diminished and coagulation is slow.

The red cells do not form rouleaux. There is well-marked poikilocytosis and great diversity in size. The average size is considerably increased. There is slight polychromatophilia. Nucleated red cells and myelocytes are present. Red cells number 1,400,000. Hæmoglobin is 28 per cent.

Circulatory System.—There is great dyspnœa on slight exertion. No palpitation or giddiness. The heart seems dilated.

A long, soft, blowing, systolic murmur can be heard at the mitral and pulmonary areas. There is a *bruit* in the neck.

The pulse is 110, regular, of low tension.

Respiratory System.—Patient complains of an irritating cough, but no morbid condition can be detected on physical examination.

Integumentary System.—There is slight swelling of the ankles at night.

Urinary System.—Urine pale, sp. gr. 1020, acid, contains no abnormal constituent.

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TABLE XXI.

Date.	Red Cells.	White Cells.	Hb. %	Colour Index.
Sept. 4th	1,400,000	5937	28	1

TABLE XXII.

	Per Cent.				Per 1000 White Cells.	
Date.	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Myelo-cytes.	Megalo-blasts.	Normo-blasts.
Sept. 4th	48·5	48·5	2	1	19	8

Case XI. A labourer aged 33, single, was admitted to Ward 31, Royal Infirmary, on October 7th, 1900.

Complaint.—"Weakness, shortness of breath and giddiness," of two months' duration.

History.—Patient's family history is good. His home is fairly comfortable.

Patient had scarlet fever in childhood. Twelve years ago, while serving as a soldier in Natal, he contracted malaria. He came home nine years ago and says he has had recurrent attacks of malaria about every two years since. The last attack was about a year ago.

He states that he had an illness similar to his present one four years ago.

Present Illness.—Patient was in his usual health and at work till two months ago. At that time a hammer fell on his head, while he was at work. As a result he had to keep his bed for a fortnight. When he got up he felt very weak and had very little appetite. He became breathless and giddy on even slight exertion.

State on Admission.—There is obvious pallor and the skin has a very faint lemon yellow tinge.

Alimentary System.—Lips and gums pale. Teeth bad. Several are missing and some are carious. The tongue is slightly furred.

There has been occasional vomiting after food. Some flatulence. Bowels irregular.

Hæmopoietic System.—The cervical glands are slightly enlarged. The spleen is not enlarged.

The blood looks pale and coagulates slowly.

Fibrin is diminished. Blood plates are fairly numerous. There are numerous poikilocytes, but most of the corpuscles are normal in shape and size. Polychromatophilia is not marked. Several of the red cells have no central concavity.

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Circulatory System.—There is mitral incompetence, and hæmic murmurs can be heard at the base.

Urinary System. The urine is straw-coloured, acid in reaction. Its sp. gr. is 1008 and there is no abnormal constituent.

Treatment and Progress.—During patient's stay in hospital, he was treated at first with arsenic, subsequently with arsenic and iron.

His symptoms greatly improved, but improvement was not so marked in the blood condition. After a stay in hospital of just over five weeks, he went for three weeks to the Convalescent Home. At the end of that time he felt stronger, though the number of red cells had diminished.

TABLE XXIII.

Date.	Red Cells.	White Cells.	Hæmoglobin °/₀	Colour Index.
Oct. 7th	1,680,000	6875	20	·59
„ 9th	1,600,000	8333	20	·62
„ 13th	1,540,000	5000	18	·6
„ 20th	1,472,000	2500	22	·74
„ 27th	2,060,400	2500	27	·65
Nov. 3rd	1,807,200	4375	28	·77
„ 10th	1,920,000	5000	20	·52
Dec. 4th	738,000	4375	15	1·0

TABLE XXIV.

	Per Cent.				Per 1000 White Cells.		
Date.	Polymorphonuclear.	Lymphocytes.	Eosinophiles.	Basophiles.	Myelocytes.	Megaloblasts.	Normoblasts.
Oct. 7th	33	65·5	·6	·4	0	0	3
„ 13th	32	66·5	1	·5	0	0	0
„ 20th	36	62·6	1	0	·3	3	0
„ 27th	40·5	57·5	2	·5	0	5	5
Nov. 3rd	35	64	·25	·25	·25	0	0
„ 10th	50·6	48	1	·3	0	0	2
Dec. 4th	62·3	36·2	1·3	0	0	0	0

In this case we again find obscurity as regards etiology.

Attacks of malaria seem to have been the most important predisposing cause. It is curious that patient should attribute his illness to a blow on the head. Its only effect probably was to direct patient's attention to his symptoms.

The case may be regarded as a chronic one, and resembles Case II. in this respect as well as in some of its other features.

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CASE XII. A brewery worker, aged 42, was admitted to Ward 31, Royal Infirmary, on October 16th, 1900.

Complaint.—"Weakness, breathlessness, swelling of the feet and cold hands."

Duration.—10 weeks.

History.—Patient's family history is good. He is married and his home is comfortable. The only previous illness he can remember was an attack of bronchitis when he was 16.

Present Illness.—Patient was at work six weeks ago. Ten weeks ago he first noticed his face becoming yellow and he saw a doctor, who prescribed blue pills. He continued at work for four weeks, but felt very weak. He says he could manage his work (washing barrels) when he got to it, but walking greatly fatigued him, and he had eventually to give it up because his "legs failed." He next began to find difficulty in keeping his hands warm, and got breathless on slight exertion.

He went to the sea-side for a fortnight but did not improve. His feet began to swell at night.

On his return he sought admission to the Infirmary.

State on Admission.—Patient is well developed. His muscles are soft, but he has plenty of adipose tissue.

He is obviously anæmic, and skin and conjunctivæ show a slight yellow tinge. Temperature 99·4.

The lips and gums are very pale. Several of the upper teeth are carious. In the lower jaw they are overcrowded, but in fairly good condition.

Appetite is poor. Bowels rather confined. Abdomen seems healthy. Liver is not enlarged.

Hæmopoietic System.—There are no enlarged glands. The spleen seems slightly enlarged, but is not palpable.

The blood looks streaky and coagulates slowly. Rouleaux formation is absent and fibrin very scanty.

There is marked diversity in the shape and size of the red cells. Many have no central concavity, and polychromatophilia and other degenerative changes are marked. Plates are diminished. Megaloblasts, microblasts and normoblasts are present. There are also a few myelocytes.

Circulatory System.—There is a slight systolic murmur at the mitral area. There is also a soft systolic murmur at the pulmonary area.

The pulse is 92 per minute, regular, of exceedingly low tension and small volume. The arterial wall is not thickened.

Respiratory System.—There is a slight cough at times, accompanied by muco-purulent expectoration.

The inspiratory murmur at the bases is a little harsh and there are a few rhonchi.

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Integumentary System.—The skin is slightly yellow. There is œdema of the ankles.

Urinary System.—The urine is dark amber and acid, and its sp. gr. is 1010. On spectroscopic examination there is a well-marked absorption band due to the presence of urobilin.

Nervous System.—Patient is drowsy and sleeps a great deal through the day. There are numerous retinal hæmorrhages in both eyes. The reflexes are unaltered. Patient is somewhat drowsy and his intelligence is not of a high order.

Treatment and Progress.—For the first five days liq. arsenic hydrochlorici and the tincture of perchloride of iron each in 5 minim doses were administered.

Patient showed no improvement and seemed so seriously ill that it was determined to try the effect of anti-streptococcus serum.

On October 22nd, therefore, the leucocytes were counted and an injection of 1 c.c. of antistreptococcus serum was administered just before patient's dinner.

The leucocytes were again enumerated just before tea in order as far as possible to avoid the disturbing agency of digestive leucocytosis. After the serum was given a slight reaction occurred and the effects on the blood are shown in Table XXVI.

TABLE XXV.

	Time.	Temp.	Reaction. Pulse.
First count, Serum given.	1.45	99	84
	2.45	98·8	90
	3.45	99·2	90
Second count.	4.45	100	100
	5.45	100	104
	6.45	100·2	112

The temperature remained about 100° F. till 10.45, then gradually fell and reached 99 at 2.45 A.M., and was down to 98·4 at 7.45.

TABLE XXVI.

Total number of white cells before serum = 7,812.
Total „ „ after „ = 10,312.

	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Myelo-cytes.	Basino-philes.	Megalo-blasts.	Normo-blasts.	Micro-blasts.
Before,	56·6	41·5	·5	1	·5	12	8	7
After,	69	30·2	·4	·4	0	15	18	1

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Total number of

	Polymorphonuclears.	Lymphocytes per c.mm.
Before serum,	4936	3501
After „	7198	3114

No further medicinal treatment was adopted for a week, as it was intended at the expiry of that time to repeat the injection of serum.

On October 29th, however, patient complained of a bad cold and a cough which kept him from sleeping. Wheezing rhonchi could be heard at both bases.

On October 31st there was much muco-purulent expectoration, and wheezing rhonchi could be heard all over the chest.

Cultures were made from the sputum and two organisms were found. One was Frankel's pneumococcus and the other the bacillus pyocyaneus.

A mixture containing ammonia and digitalis was given every four hours.

Next day some patches of percussion dulness could be detected over both lungs posteriorly.

Although the temperature began to come down, patient did not improve, and he died on November 6th.

TABLE XXVII.

Date.	Red Cells.	White Cells.	Hb. %	Colour Index.
Oct. 16th	800,000	—	20	1·2
„ 19th	728,000	8,437	16	1·1
„ 22nd	—	7,812	—	—
„ 26th	712,000	{ 10,312 } { 5,937 }	14	·98
Nov. 2nd	680,000	10,000	15	1·0
„ 3rd	530,000	10,000	14	1·3
„ 6th	524,960	9,375	14	1·3

TABLE XXVIII.

	Per Cent.					Per 1000 White Cells.		
Date.	Polymorpho-nuclear.	Lympho-cytes.	Eosino-philes.	Myelo-cytes.	Baso-philes.	Megalo-blasts.	Normo-blasts.	Micro-blasts.
Oct. 19th	57·4	41·6	·6	·4	0	32	16	2
„ 22nd	56·5	41·5	·5	1	·5	12	8	7
	69	30·2	·4	·4	0	15	18	1
„ 26th	56·5	42	1·5	0	0	30	7	5
Nov. 2nd	68	30·8	0	1·2	0	24	10	2
„ 3rd	68·2	31·4	·2	·2	0	50	16	2
„ 6th	71·4	28	0	·6	0	33	16	6

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On November 8th a *post-mortem* examination was conducted by Dr R. A. Fleming.

The heart muscle showed fatty degeneration and there was fatty infiltration of the wall of the right ventricle. The fat was of a bright canary yellow colour. The left lung showed recent pleurisy over its whole surface.

There was extensive lobular pneumonia over practically the whole of the left lower lobe.

The upper lobe showed well marked œdema, and near its root a few patches of catarrhal pneumonia.

The right lung showed over its greater part thick, fibrinous, pleuritic exudation.

The lower lobe was congested and œdematous, and there were a few patches of catarrhal pneumonia near the root.

The liver weighed 3 lbs. 13 oz. It was dark brown in colour. It showed numerous hæmorrhages in the central zone of the lobules, as well as marked pigmentation in the same areas. There was fatty infiltration and a well marked free iron reaction.

The bone marrow was bright red in colour and gelatinous looking. The medullary cavity seemed slightly dilated.

On microscopic examination, numerous nucleated red cells were found.

The brain was slightly anæmic. The convolutions were slightly atrophied. There was some excess of cerebro-spinal fluid.

In the pons there were several minute hæmorrhages dotted irregularly throughout its structure. There was a smaller number in the medulla and a few in the cerebellum. Throughout both hemispheres in the ependyma and lateral ventricles there were a few scattered hæmorrhages. The vessels at the base were healthy. The eyes showed numerous retinal hæmorrhages.

This case was an unusually rapid one. There was no previous illness of any important bearing on the case, and the patient was at work less than three months before he died.

The blood when first examined indicated a serious prognosis. The only favourable point was the comparatively high percentage of polymorphonuclear leucocytes, but this may to a certain extent have been due to a slight leucocytosis accompanying chronic bronchitis.

The number of red cells slowly but steadily diminished.

A certain leucocytosis accompanied the pneumonia (for 10,000 cells must be considered a leucocytosis where the usual figure has been between 5,000 and 8,000), but it was so slight

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that for that reason alone one would have given a very grave prognosis apart from the underlying question of pernicious anæmia. In this case antistreptococcus serum seemed useless.

One injection of 1 c.c. may not be considered quite a fair trial, but a definite reaction followed its use, and there was a definite increase of leucocytes during the reaction, so that we must admit that the serum at least affected the blood, although that effect did not appear to lead to improvement.

(*To be concluded.*)

NOTES OF A CASE OF CHLOROMA AND OF THREE CASES OF LYMPHATIC LEUKÆMIA[1]

By BYROM BRAMWELL, M.D., F.R.C.P.Ed.,
Physician to the Royal Infirmary, &c.

SEEING Dr Dunlop was to bring his case of chloroma before the notice of the Society this evening, I thought it might be well to take the opportunity of recording a case of that rare disease which came under my notice last summer, and also of briefly referring to some other cases of lymphatic leukæmia—a condition which seems to be very closely related to chloroma.

CASE I. *Chloroma.*—Married man, aged twenty-five, a teacher of music, enjoyed excellent health till October 1900, when he accidentally discovered a small glandular swelling on the left side of the neck below the jaw. A week later a similar swelling developed on the right side of the neck. In January 1901, an eruption developed on the front of the chest, and gradually extended over the greater part of the body. In February, rheumatic pains were felt for a fortnight in the back. In April, the face and gums swelled, the eyes became watery and painful, the voice husky, and some deafness developed. On May 22nd, 1901, the patient was sent to me by Dr Douglas of Cupar. The condition was then as follows:—The patient was much debilitated, and had lost a stone in weight. He complained of soreness of the mouth and gums, and of deafness, more marked in the right than in the left ear. He was not anæmic. There was no excess of white corpuscles in the blood. The face was swollen, the swelling being chiefly due to the presence of nodular swellings in the skin, œdema of the skin, and glandular swellings in the neck and parotid regions. The voice was husky; the breathing attended with some stridor; there was frequent cough; the patient could not breathe through the nose. The pulse was quick (120 to 130); the temperature 100·6°. A remarkable eruption was present over the greater

[1] Read before Edin. Med.-Chir. Soc., Feb. 5, 1902.

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part of the body; it was copious on the thorax, abdomen, back, arms, face and scalp; sparse over the lower extremities. The eruption consisted of flat-topped nodules varying in size from a pin-head to a sixpence; in many places the nodules were confluent, and produced a uniform raised infiltration of the skin; the nodules were painless, not adherent to the deeper parts, and, for the most part, of a slaty-grey or purple-grey colour; some of them were yellow in their centres. The gums were enormously swollen, firm, and of a dark purple colour; the right tonsil was much swollen, and of a dark purple colour. The conjunctivæ presented a peculiar appearance, being infiltrated with a translucent, fleshy-looking growth, in which vessels could be seen ramifying. There was no exophthalmos. The optic discs were normal. The glands on each side of the neck below the jaw were swollen, hard and painless. The parotid glands appeared to be enlarged. There was some symmetrical swelling in each temporal region. The splenic dulness was increased. The liver was somewhat enlarged. The urine was normal. There were no pigmented moles or warts; but I came to the conclusion that the case was probably one of melanotic sarcoma, with peculiar infiltration of the skin, gums, tonsil and conjunctivæ. The patient was admitted to the Edinburgh Royal Infirmary on May 23rd, and remained there until his death, which took place a month later—on June 24th. Microscopical examination of portions of skin excised during life showed that the case was not one of melanotic sarcoma; the nodules in the skin consisted of lymphoid deposits, and were entirely made up of small uninucleated round cells. The blood count showed that the red corpuscles numbered 4,480,000, and the white corpuscles 8000, per cubic millimetre. The white corpuscles were almost entirely (95 per cent. or more) lymphocytes, chiefly large lymphocytes, with large nuclei and clear, non-granular protoplasm. During the month that the patient remained in hospital, the blood condition remained practically the same; the temperature was elevated (highest 104°), and the pulse remarkably quick (from 110 to 160), the respirations always above the normal (25 to 35). The breath was foul; the gums occasionally bled slightly. No micro-organisms were detected (either in stained films or after incubation of gelatine tubes) in the blood. The skin eruption increased, and many of the nodules became yellow, some yellowish green, and a few on the face distinctly green in colour. The face became much more swollen. The fleshy infiltrations of the conjunctivæ became much larger. On *post-mortem* examination, the skin lesions (nodules) on the face, thorax, abdomen, back and arms were of a green colour; some

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of the glands in the neck were green, the tonsil was green, the epiglottis and laryngeal mucous membrane were green. The bones of the head and face were not examined (permission was limited to the thoracic and abdominal cavities). The glands in the neck were enlarged, the spleen and liver were enlarged, the gums, tonsils, epiglottis and larynx were greatly swollen, the swelling being due to lymphoid infiltration. The bone marrow of the ribs contained some, but not very numerous, lymphoid cells, similar to those in the skin, gums and blood. There were some petechiæ on the heart. The thoracic, abdominal, axillary and inguinal glands were hardly at all affected. The kidneys were infiltrated in places with lymphoid deposits.

The case was undoubtedly one of chloroma. The condition of the blood corresponded to that of acute lymphatic leukæmia, and it was very important to note that the leucocytes (95 per cent. or more of which were lymphocytes) were not increased in number (8000 per cubic millimetre). The mere fact that the leucocytes were not increased in number did not exclude leukæmia. It was necessary to note the character of the leucocytes in stained films. The case was remarkable because of the skin lesions and the very peculiar infiltration of the conjunctivæ, gums, epiglottis and larynx. I had never seen anything like the condition of the gums, conjunctivæ, epiglottis and larynx before. Curiously enough another case in which exactly similar lesions were present has since come under my observation.

CASE II. *Acute lymphatic leukæmia with a similar lesion in the gums, epiglottis and larynx to that which was present in Case I.*—The patient was a labouring man, aged 33, who was admitted to the Edinburgh Royal Infirmary on Saturday, 29th September 1901, and who died on Sunday, 30th September 1901. He complained of shortness of breath on exertion, of deafness, and of glandular swellings on each side of the neck and jaw. The deafness had commenced a month previously, but he had continued his work as a labourer until three days before his admission to the hospital. He was a thick-set, well-nourished, muscular man. There was no anæmia, in fact his face and lips were turgid and cyanotic. No examination of the blood was made during life, but after death the blood was found to contain a large excess of lymphocytes, mostly of the large form. The patient was very deaf. His voice was husky and almost toneless, he was very short of breath, and the respiration was attended with stridor. Large, hard, painless, glandular swellings were present on each side of the neck, especially marked about the angle of the jaw; the face was swollen and blue; the veins of the neck somewhat engorged. I only saw

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the patient for a moment on his admission to hospital, and did not make an exhaustive examination of the case, but my impression was that the condition was suggestive of enlargement of the mediastinal glands with intrathoracic pressure. The case was more carefully examined by Dr Montgomery Bell, house-physician. The chest was full of bronchitic râles. The pulse numbered 100, the temperature was 102°, and the respiration 20. The tonsils were swollen and ulcerated. The patient died on the day following his admission to hospital. *Post-mortem* examination showed that the case was one of acute lymphatic leukæmia. The glands throughout the body were enlarged; the spleen, liver and kidneys were infiltrated throughout with lymphoid cells; the bone marrow was of a dark purple colour and infiltrated with lymphoid cells. In the skin of the back of the neck there were several lymphoid deposits similar to those which were present in the first case. In the second case, a condition of the gums, tonsils, epiglottis and larynx identical with that in the first case was present.

The second case was undoubtedly a typical example of very acute lymphatic leukæmia with peculiar lymphoid infiltrations of the gums, tonsils, epiglottis and, to a very limited extent, of the skin.

The two cases when taken together have, I think, an important bearing upon the pathology of chloroma. That disease is very rare, but it is probably much more common than is usually supposed. Many cases no doubt are missed. A case figured in a recent number of the *Medical Review of Reviews* (November 1901, p. 695), and described as a "Rapidly-growing Tumour of the Orbit" is, I have no doubt, a case of chloroma. Some years ago, a friend in Barbadoes sent me a photograph of a remarkable case of symmetrical sarcomatous growths of the orbits with exophthalmos, which was probably a case of chloroma; it appeared to be merely an exaggeration of a case of chloroma recently published by Rosenblath (*Deutsches Archiv. für Klinische Medicin*, 72 Band, 1 Heft, 1902). It was probable that some of the rare cases of so-termed perforating sarcoma of the skull, of which I reported a case a few years ago, were cases of chloroma. I had in August last the advantage of discussing the whole subject of chloroma with Professor George Dock, who has made a special study of the disease. Dr Dock agreed with me in thinking that the case (Case I.) which I have just described was a case of chloroma.

As Dr Dunlop has told us, chloroma is a very rare disease, some five and twenty cases only having been recorded up to the present time.

In typical cases, the characteristic features of chloroma are as follows:—

(1) *The presence of lymphoid deposits in the orbits, temporal*

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fossæ and periosteum of the bones of the skull, and the symptoms and signs resulting therefrom.

In consequence of the lymphoid deposits in the orbits there is usually, but not always, exophthalmos; and often as the result, partly perhaps of the pressure on the optic nerve and its vaginal sheath, and partly of the altered blood conditions (lymphatic leukæmia and anæmia), hæmorrhages in the retinæ, and optic neuritis. Lymphoid infiltrations of the conjunctivæ, which in some cases produce large protruding swellings, resembling sarcomatous out-growths and fungations, sometimes occur. Lymphoid infiltrations of the cornea are also sometimes developed.

Firm bilateral swellings in the temporal fossæ are very often present.

The periosteal lesions are not confined to, though they are apparently always most marked in, the region of the skull and face. The periosteum of the bones of the vertebral column is often affected. In a recent case (Rosenblath's first case) the spinal column was eroded, the nerve roots and spinal cord pressed upon, and secondary ascending degenerations in the spinal cord developed.

Deafness is very common; it is apparently, in some cases, due to pressure on the auditory nerve, in others to lesions (involvement) of the middle or internal ear.

Facial paralysis due to pressure on the facial nerve is sometimes met with.

There is in many cases difficulty in breathing through the nose, the result of swelling and infiltration of the nasal passages.

The tonsils are often enlarged and infiltrated.

The remarkable swelling of the gums, epiglottis and larynx which was present in the two cases which I have related has not, so far as I have been able to find, been hitherto described—but I was much interested to find, when Dr Dunlop kindly gave me an opportunity of seeing his case during life, that in his case the palate was swollen and infiltrated in exactly the same manner.

(2) *The green colour of the lesions* (lymphoid deposits in the orbits, periosteal lesions, lymphoid deposits in the kidneys, liver, spleen, bone marrow, etc.).

This is a remarkable feature of the disease. In many of the recorded cases the green discoloration was only noticed after death. But that the green colour, in some cases at least, is not due to *post-mortem* changes is conclusively shown by the fact that in some of the recorded cases the urine was green during life.

As Dr Dunlop has stated, the exact cause of the green colour is still unknown. In my own case the change in colour which the skin lesions went through during life was suggestive

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of a blood change, and the marked increase of the green colour which was noticed at the *post-mortem* examination in the skin lesions *in the upper part of the body* seemed to me to be suggestive, in part at least, of a *post-mortem* (? decomposition) change.

The question naturally occurs, whether in all cases of chloroma the green colour is due to the same cause. It is possible that it may be due to different causes in different cases. It is possible that green tumours are not invariably due to one and the same pathological condition.

Further, though this may at first sight seem to be a contradiction in terms, it seems to me probable that cases of chloroma occur in which there are no green tumours and no green lesions. I am strongly disposed to think that the green discolorations, though they have hitherto been considered to be essential and characteristic features of the disease, may, in some undoubted cases of chloroma, be absent.

These questions require solution.

(3) *A profound blood change*, characterised by anæmia, cachexia, hæmorrhages into the skin, bleedings from the mucous membranes, especially epistaxis and petechial extravasations into the retinæ and internal surfaces (epicardium, etc.).

The same profound blood change is met with in most cases of acute lymphatic leukæmia, but it is certainly not always present. In the two cases which I have just described (Case I., chloroma, and Case II., acute lymphatic leukæmia), there was little or no anæmia and no cachexia.

The essential blood change in chloroma seems to be an enormous excess of the lymphocytes, and especially of the large lymphocytes in the blood; in short, in cases of chloroma the blood seems (? always) to present the characteristic features (95 per cent. or more of lymphocytes) which up to the present time are regarded as indicative of one condition only, viz., lymphatic leukæmia.

Further, (4) *The bone marrow, spleen, lymphatic glands and organs through the body are affected (infiltrated with lymphoid deposits) as in lymphatic leukæmia.*

In all the recent cases of chloroma which have been examined exhaustively, the blood has presented the characters of lymphatic leukæmia. In some cases in which there was no excess of leucocytes, the character of the corpuscles was not ascertained by stained films. Now, the case I have related shows that lymphatic leukæmia may be present when there is no excess of leucocytes. The question whether chloroma is a definite and distinct disease or whether it is merely a variety of acute lymphatic leukæmia is a very difficult one to answer—a good deal can be said on both sides. The peculiar location of the lesions to the orbits and periosteum of the skull bones, though they were not of course confined to these parts; the

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green colour of the tumours; the fact that, in some cases, the tumours were of cartilaginous consistency; and the fact that, in some cases, the bones (as in one of Rosenblath's recent cases) were eroded and perforated by the growths, were in favour of sarcoma or lymphosarcoma rather than of lymphatic leukæmia. But the condition of the blood was highly suggestive of lymphatic leukæmia. The three cases which have been brought before the Society this evening seem to show that no hard and fast line can be drawn between acute lymphatic leukæmia and chloroma. Dr Dunlop's case is a highly typical case of chloroma, with all the changes in the blood characteristic of acute lymphatic leukæmia. My second case is a typical case of very acute lymphatic leukæmia with peculiar lesions in the gums, tonsils, larynx and skin; and my first case seems midway between the two (Dr Dunlop's case and my second case). The mouth lesions seem to be the same in all three cases. The whole question seems to turn upon the nature and definition of lymphatic leukæmia. Possibly the same condition of blood (95 per cent. or more of the white corpuscles being lymphocytes) may result from more than one pathological condition. But, practically speaking, lymphatic leukæmia and chloroma are the only known diseases in which such a condition of blood is present. Probably more than one disease is included under the term lymphatic leukæmia, or, at all events different varieties of the disease exist. Certainly different cases of lymphatic leukæmia present considerable differences in their clinical history and course and in the relative intensity of the lesions found after death in the bone-marrow, spleen, and lymphatic glands respectively. In this connection I may briefly describe (Case III.) *a case of very acute lymphatic leukæmia* which has occurred in my hospital practice during the past week, in which there was comparatively little glandular change, but in which the lesions in the spleen and bone-marrow were very marked. This case is also very interesting because of a peculiar condition of the kidneys. Both kidneys were very much enlarged, and the cortical substance was infiltrated with numerous large hæmorrhages; the intervening substance being pale, exactly of the colour of very anæmic brain tissue; the left kidney weighed 18 and the right 14 oz. The peculiarity of the condition was that the urine, which was carefully examined on three separate occasions during the last three days of life was pale and absolutely free from blood and albumen. At the *post-mortem* the bladder contained 14 oz. of very pale urine, the specific gravity of which was 1012; it was absolutely free from blood and contained the merest trace of albumen, which was perhaps derived from the vesical epithelium.

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Also (Case IV.) *a case of chronic lymphatic anæmia*, in which the disease was of eighteen months' duration and in which the glandular enlargements in the neck, axillæ, groins, and thoracic and abdominal cavities were of very large size. In that case too the spleen and liver were considerably enlarged, and the bone marrow markedly affected.

This communication is merely preliminary. It would have been impossible in the time placed at my disposal to attempt to discuss the nature of chloroma and of lymphatic leukæmia exhaustively—all I have attempted to do has been to mention the chief clinical and pathological facts of the cases which I have related.

Special Article

CLINICAL PATHOLOGY

By STUART M'DONALD, M.B., M.R.C.P.Ed.,
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THE subject of Clinical Pathology would seem too vast to discuss in a short article such as the present, a text-book would be required to do it even moderate justice, for the clinical aspect of pathology is an essential part of the science as a whole. Active and unfortunate as is the growing distinction between Medicine and Pathology as separable sciences, complete divorce is impossible. It is a pity that the same cannot be said of some of the preliminary scientific subjects in the medical curriculum.

It is more particularly with regard to some aspects of the application of pathological methods to the diagnosis of disease in the living subject that this paper is concerned.

Most of what I have to say must be familiar to all who remain in close touch with a Medical School, yet I venture to think there may be some to whom a few hints on this subject may prove of use.

There are two classes of medical men who not infrequently invoke the aid of the pathologist in the diagnosis of disease. We have a small but worthy group who have unlimited faith in the power of the pathologist to diagnose any given condition with the aid of the microscope; and we have a second and larger class who make no endeavour to conceal their doubts as to the ability of the pathologist to render any material aid in the diagnosis of disease. The first class often demand impossibilities: the members of the second group are at times a trifle irritating. It is not to be suggested for a moment that there is not a third and larger class who can steer a happy middle course and make use of the pathologist's report without being guided entirely by it.

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The subject may be discussed under the headings of Morbid Histology, Chemical Pathology, and Clinical Bacteriology.

Morbid Histology.

We may take as an example the not infrequent request from the clinician for a diagnosis between a simple and a malignant new growth. In the first place, the pathologist has not infrequently to complain of the state in which he receives the specimen for examination. Nor is this altogether to be wondered at, for if one turns for information to a text-book he becomes bewildered at the multiplicity of methods for the correct fixation and preservation of tissues for microscopical examination. As a matter of fact the best results are to be obtained by a variety of methods, according to the particular point to be investigated. In spite of the considerable shrinkage of the tissues by alcohol, it is apparent that the advantages of ordinary methylated spirits as a fixative and hardening agent for ordinary, as apart from nervous, tissues are not sufficiently recognised. Tissue so fixed cuts easily and stains well. Spirit too has a distinct advantage where a bacteriological examination of the tissue is also required. Formalin in 10 per cent. solution is an excellent general tissue fixative, but bacteria in such fixed tissue sometimes require special methods for their demonstration. The modern tendency to put all pathological specimens into strong solutions of formalin is to be strongly deprecated, it being difficult after a time to obtain satisfactory sections of the, so to speak, petrified material. Of course it is admitted that better results can be obtained from the such special fixatives as saturated corrosive solution, Fleming's solution, Zenker's fluid, and so on, specially with tissue fresh from the body, but the practitioner has not, as a rule, these special fluids at hand, and has not time to prepare them. It stands to reason that all tissue intended for microscopical examination should be put into the fixative, *e.g.* spirit, as soon as possible, though it is wonderful how much can sometimes be made out of tissue which has been neglected in this particular. I heard some time ago of a surgeon who, having removed a small piece of a suspicious tumour for microscopical examination, unfortunately left the specimen in his coat pocket for some days. In spite of this, however, the pathologist who examined the specimen was able to report that the tumour was undoubtedly sarcomatous, and that the cells, though sat on for some time, were still round.

Small pieces of tissue for microscopical examination, sent from a distance, should be wrapped in a little cotton wool so as to minimise shaking in the bottle.

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To return to our classification of practitioners, the first class may be reminded that the pathologist is not omnipotent. It must be admitted that in many cases the mere histological appearance does not warrant an exact diagnosis. They should remember that their duty towards the pathologist does not cease with the delivery of a piece of perfectly fixed tissue. The specimen in all cases should be accompanied by a brief history of the case and a statement of the special points to be investigated. Too often this is entirely forgotten. I am told that in many of the German laboratories specimens sent without such information are immediately consigned to what is the equivalent of the waste-paper basket in a pathological laboratory. Everyone is aware of the extreme difficulty of distinguishing between inflammatory and sarcomatous tissue, but the clinical history, with a statement as to the site of the lesion, sometimes enables one to give a definite opinion where the microscopical appearances alone would not justify this.

Is it too much to ask this of the clinician? In the majority of cases he gets his information for nothing, there being a popular delusion that the pathologist is a man of unlimited means or is capable of existing on enthusiasm for his subject. Pathologists as a rule, however, are always ready and willing to undertake such investigations, the experience gained from such carefully recorded cases being recompense for the trouble entailed. Were such a system in vogue and, above all, if the pathologist was supplied with a note of the subsequent history of the case, progress in this particular branch of medicine would be more rapid than it has been in the past.

The surgeon should remember also that where he has a choice he should send for examination more than one piece of the tissue, as the appearances vary so much in different parts of say a tumour. The advancing margin of the new growth should be included in all cases. It has become the rule, in cases of cancer of the mamma, to send at the same time for examination any axillary glands that have been removed. This is only proper, but it is not sufficiently recognised that the examination of glands in the vicinity of a suspicious infiltrative thickening, say of the stomach or intestine, may yield definite evidence of malignancy, where examination of individual sections of the thickening itself may only show an overgrowth of fibrous tissue, and suggest nothing but a chronic inflammatory change. I have repeatedly seen this, though of course one recognises that many enlarged glands in the vicinity of undoubted malignant disease show no secondary invasion. No stricture of the pylorus or intestine should be pronounced "simple" without the most careful microscopical examination

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of a large number of sections from different parts of the area of stricture. One is tempted to wonder how many of the reported cases of natural cure of undoubted malignant disease in the alimentary tract can be explained on the hypothesis that the fibrous hyperplasia has, so to speak, overcome the epithelial overgrowth as is seen in some cases of atrophic cancer of the mamma where the condition may last for twenty years. There is no reason why life should be materially shortened by malignant disease of this type, unless the cicatricial contraction leads to some definite obstruction.

And now to pass to some consideration of the second class of practitioners whom I may venture to designate the healthy sceptics. It is to be admitted at once that they have their use in restraining the young and ardent pathologist from rash self-committal. Should one be unfortunate enough to make a mistake in dealing with members of this class, he is not readily permitted to forget it, and useful experience has been gained. It is a favourite dictum with such sceptics, that where the clinical examination leaves one in doubt, little assistance need be expected from the pathologist's report. For the sake of argument this may be admitted in many cases, and the clinician need not expect a definite diagnosis from the pathologist in every case. A dogmatic opinion on the innocence or malignancy of a given tumour often means limited experience on the part of the observer. Is it not the case that with their ever-widening experience, our best clinicians often find it impossible to come to a definite conclusion about a particular case, and may not a similar permission to have his doubts be extended on occasion to the pathologist? Few ,however, will be found to seriously deny the fact that in many cases a simple microscopical examination suffices to clear up a very doubtful clinical point. There is another point, however, on which I should like to join issue with the "sceptic." He has an unfortunate way of sending for examination only such specimens as present some difficulty in ordinary clinical examination. In many cases, too, he is content to rely on the naked eye examination of his specimens, and in the past, at least, he has had no hesitation in placing his observations on permanent record. It is no disparagement of the surgeon's power to insist that many of these older records are entirely fallacious. To take a particular example, and in spite of the statement of Marmaduke Shield that the naked eye is as useful as the microscope, in determining the real morbid condition present in the breast, cases occur whose real nature would be entirely mistaken without a microscopical examination. I have seen such mistakes made by the most competent observers; interstitial mastitis confused with

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scirrhus cancer, and the tuberculous nature of a mastitis entirely overlooked. So perhaps, though the pathologist may be unable to help the sceptic towards a diagnosis in many of his difficult cases, he may assist in the elucidation of some of his more obvious ones. That much of this scepticism is more apparent than real may be gathered from the fact that the "doubter's" cry of "Come over and help us" is by no means uncommon. Such illustrative cases must not be misunderstood. The pathologist's aim is to confirm and aid the clinician in his diagnosis, not to upset it. Pathology should be the hand-maiden of medicine and surgery. It is not an opposed science.

There is, no doubt, a danger to the student in the diagnosis of disease by the microscope alone. He is apt to wonder where is the use of all these complicated methods of case-taking and clinical observation if the same result can be arrived at by a simple microscopical examination. This would indeed be a fatal error. Careful clinical observation is of course the most essential factor in the education of the physician or surgeon, but the clinician must not be deterred by this danger from making use of the pathologist's report. After all it is only another factor in the diagnosis which should blend with the evidence obtained from clinical examination, and complete the diagnosis as far as is humanly possible.

I have read with interest the article (on Rapid Section Cutting) by Dr Ramsay Smith which appeared in the January number of this Journal. While much can undoubtedly be made out by these modern methods, I must confess to doubting the efficacy of the freezing microtome in the operating theatre. There the diagnosis is demanded in a few minutes, and personally I do not think that where a serious operation may depend on the microscopical report, such opinion should be advanced on such a limited observation. Such lightning diagnoses are dangerous. Successes look well, but a mistake would bring not unmerited discredit on the microscopist. I have been asked more than once to give an opinion based on such an examination, which might determine such an operation as an amputation of the thigh or at the hip; but I have only done so under protest, feeling that where the surgeon is in doubt after a careful examination of the case, it is hardly reasonable to expect the pathologist to give his final decision in a few minutes. The situation certainly demands a more detailed examination, it may be of several sections. It is in the operating theatre, too, that there is a special danger of the student misunderstanding the value of the microscopical report.

Before leaving the subject of morbid histology, it might be

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well to look for a moment at the possibilities of diagnosis from the examination of cells and scrapings. It must be admitted at once that in the majority of cases evidence from this source has not the same value as where one can examine a solid piece of tissue of some size. For instance, while the microscopical examination of uterine curettings often give important information, their exact interpretation is notoriously difficult and uncertain. The diagnosis of malignant disease from individual cells, or even small groups of cells, is generally quite impossible. Attempts have been made in recent years to determine the specific nature of some inflammatory process from the particular type of cell present in the effusion. Thus it has been claimed that an excess of the mononuclear cell in fluid withdrawn from the sub-dural space by lumbar puncture during life may enable one to distinguish a tuberculous meningitis as apart from a meningitis of pneumococcal or meningococcal origin, where the polymorpho-nuclear cells are said to predominate. In several cases I have certainly found this to be so, the diagnosis being afterwards confirmed at the sectio; but I notice that Osler states that it has been found impossible to place any reliance on this point in several cases examined recently in the Johns Hopkins Hospital. It must be remembered, however, that a simple bacteriological examination (of the fluid) will enable a diagnosis to be made in the vast majority of the pneumococcal and meningococcal cases, and a diagnosis of the tuberculous cases can be arrived at by exclusion. The importance of a centrifuge in making any observations on cellular deposits is of course very great. No reference is here made to the importance of casts in the diagnosis of nephritis. Briefly, it may be stated that while more may be expected from such cytological examinations in the future, too much reliance must not be placed on them at present.

A word must be said as to the examination of the blood. The complete examination of the blood has now become an operation of considerable complexity, and the interpretation of stained films requires special training and considerable experience. It is probably too much to expect this of the (ordinary) student or practitioner, but at least everyone should know how to make a blood film properly. Even this requires considerable experience, but a method such as the following is sufficient for ordinary purposes of diagnosis:—Clean an ordinary 3″ × 1″ glass slide thoroughly with soap and water; finish the cleansing with alcohol or spirit, and dry. Clean the lobe of the ear with soap and water, and dry. Prick the lobe with an ordinary straight surgical needle. Transfer a small drop to one end of the slide. Touch this with a piece of gutta-percha tissue

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or cigarette-paper: the blood spreads out in a thin film between the tissue or paper and the glass. Now draw the tissue or paper along the slide: a broad thin smear is left. This is allowed to dry in the air. The edge of another slide may be used instead of the gutta-percha or paper. It is said that some leucocytes may adhere to the paper, etc., but enough will be left on which to base a diagnosis should anything specially abnormal be present. This method is much easier than the cover-glass method for those who have little or no experience in making blood-films. If the practitioner would make such preparations oftener from some of his doubtful cases, and transmit them to the pathologist, he might gain much useful information, and possibly it might be found that conditions such as leucocythemia are commoner than is generally supposed.

It is rather remarkable what little use is still made of leucocytosis as an aid to the diagnosis of disease, more particularly, perhaps, to the diagnosis or exclusion of obscure suppuration. Enumeration of the leucocytes must of course be done within an hour or two, as a rule, of the withdrawal of blood, so that the practitioner himself must make the examination. With a Thoma Zeiss pipette he should be able to do so in a few minutes. I might perhaps mention one or two cases showing the great value of the information which may be obtained in this way. Some years ago I had occasion to examine the blood in a number of cases of appendicitis, etc. I remember one case where the surgeon was in doubt as to whether pus was present or not. Examination of the blood gave a count of nearly 40,000 per c.mm. Neither the pulse nor the temperature suggested pus, but, on operating, a large collection was found lying behind the ascending colon. It is not so much a very high leucocyte count that is so important in these cases as a rising count. In another case appendicitis was diagnosed: the leucocyte count was only 7000 per c.mm., and the appearance of Widal's reaction a day or two later showed the real nature of the case. Lastly, as another example of the possibility of excluding suppuration at times by the absence of leucocytosis, the following case may be mentioned. The patient was operated on for renal calculus, and a stone removed from the right kidney. The wound gradually healed, and a small sinus was left. One day the discharge from the sinus ceased, and the temperature rose to 103 degrees. The suspicion of retained pus was strong, but a leucocyte count showed only some 7000 per c.mm. Next day patient's temperature was still high, and he looked extremely ill. Still the leucocytes showed no increase. Next day a small calculus was passed by the wound, and the temperature fell at once. It

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cannot be too strongly insisted on, however, that this question as to the presence or absence of leucocytosis is after all only one point in the case. It must not decide everything, but it will often yield definite information as to a patient's real condition when other methods fail.

The aid to prognosis (from enumeration of the leucocytes), both in surgical and medical cases, *e.g.* acute pneumonia and diphtheria, is also very great, the essential point being that a patient, obviously seriously ill from some condition which should give rise to leucocytosis, whose blood does not show any such increase, will almost certainly die.

Chemical Pathology.

The subject of chemical pathology need not detain us long. It is, no doubt, the great field for future research, but its problems are at present of more interest to the laboratory worker than to the practical physician. It is fully recognised now that, in relation to the micro-organismal theory of disease, we must study the soil as well as the plant, and that bacteria after all are only one factor in the causation of disease. It would almost appear that there must be a halt in the march of progress in this direction till we know more of the ultimate chemistry of the tissues and fluids of the normal body. Practical application of chemical methods to the diagnosis of disease is not wanting, of course. The chemical examination of the urine is all-important, and it would appear that the significance of the amount of urea in a urine is occasionally forgotten. Such examinations are but seldom required, however, of the pathologist.

Chemical analysis of the gastric contents often gives important information, so too does the analysis of fluid from such a source as a supposed pancreatic cyst. Such examples might be multiplied. The only important point in sending such material to the pathologist for examination is this, that where several pints of such a fluid are available, rather more than the contents of one or two capillary pipettes should be sent.

We can now pass to a few considerations of the third branch of this subject, namely,

Clinical Bacteriology.

The science of bacteriology is now suffering from the fact that in the past, as in all new sciences, deductions have been extensively drawn from incomplete or erroneous observation. The extreme complexity of the subject is only now being understood. As witness of this fact, look at the present doubt

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as to the mode of infection with tuberculosis in man. While no opinion as to the truth of Koch's contentions is here expressed, it will be generally admitted that a year or two ago no such doubt would have been permitted. The discovery, too, of the large and important group of acid-fast bacilli has converted the identification of the tubercle bacillus itself from a simple side-room examination into a question for the bacteriological expert.

I have recently examined some bacilli in urine, whose morphological identity with tubercle bacilli is indeed remarkable, and even with the assistance of inoculation experiments I must still confess to a doubt as to their real nature. Such admissions, I find, afford excellent sport for the Philistines, and one hears not uncommonly sarcastic remarks, not only about bacteriological diagnosis but about the science as a whole. Such remarks, of course, only spring from ignorance. Bacteriology needs no apologist. For a science that is hardly more than come of age, its results are marvellous. If the individual one sometimes hears scoffing in a pleasant way as to the futility of bacteriology would think for a moment of the number and quality of the lives saved by the use of diphtheria anti-toxin, in comparison, say, with the lives saved by the most brilliant achievements of modern surgery, he might find some valuable material for reflection. I have no intention here of discussing the vexed question of the bacteriological diagnosis of diphtheria, but the thinking observer must admit that, though what are apparently errors are sometimes made in this way, fewer mistakes are made than in the old days, and, as a rule, mistakes are made on the safe side and tend to the common good. With reference to the bacteriological diagnosis of enteric by the Widal test, one is sometimes told in great glee by the "clinician" of cases where the reaction was present in cases which, in the observers' opinion, mark you, turned out to be something other than typhoid. Putting aside the possibility of diagnosing all cases of enteric clinically, and one may safely venture to doubt if this be possible, such observers seem to be unaware that Widal's test is not infallible. In this country, at least, it appears to be reliable in only some 98 per cent. of cases, and one is tempted to wonder what other symptom or physical sign is present in enteric in anything like the same proportion. When a mistake does occur the clinician must not regard it as a score over the bacteriologist, but simply as an admission on his part that he is not omnipotent! The popular belief in the powers of the bacteriologist is truly great, however. It is quite a popular delusion that he is able, by simply looking down a microscope, to immediately pronounce

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on the identity of some particular microbe that may be present. If this can be done at all, it is only where the bacteriologist knows the source of the specimen and the clinical history of the case. In the vast majority of cases it is absolutely impossible, and the absolute identification of a particular micro-organism is not a matter of a few minutes' examination, but may take days or weeks, entailing both cultural and inoculation experiments. It is not sufficiently recognised that there should be two varieties of bacteriological diagnosis. One of probability, often extreme, which in the majority of cases is all that the clinician requires; and another of certainty, which is by no means so easily arrived at. For instance, the presence of a large number of diplococci of particular shape and staining property inside the leucocytes of a urethral discharge is good enough evidence of the existence of a specific urethritis; but before one could go into the witness-box and swear that these are gonococci and no other, one requires evidence from cultivation experiments, which may not be obtainable for several days. No special instructions should be necessary for the medical man in sending pus or fluid for bacteriological examination. Such material should be collected with the most rigid aseptic as opposed to antiseptic precautions, in sterile test tubes or capillary tubes; these should be plugged with sterile wool, or hermetically sealed and transmitted to the laboratory at the earliest possible moment, with a brief history of the case, and a definite statement of the particular point to be investigated. The not uncommon request for a complete bacteriological examination of some pus in a very mixed infection means a very considerable undertaking, and in many cases this is not really asked for. Let the medical man be patient also if he receives after all a report in which probability bulks large. It is even more true in bacteriology than in morbid histology that dogmatic statements often arise from insufficient experience or from positive error.

I shall doubtless be told that I have been stating only self-evident facts, and that what I have said is perfectly well known. I can only state that in my limited experience I have not found this so.

It is not to be wondered at that many of the older practitioners are ignorant of the possibilities and limitations in the way of diagnosis by the microscope, etc., when even now large numbers of students become qualified and enter into practice without a practical working knowledge of what is possible and what is not in regard to these matters. It must be admitted, however, that there is an ever-increasing number of men coming forward to the study of pathology who can make practical use

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of what they have learned in other classes. I feel strongly, however, that if the curriculum of the medical student is to be further extended, it should be in the direction of further practical teaching of clinical pathology, rather than in making such a subject as bacteriology compulsory. Such instruction, to be of most use to the student, should be as far on in the course as possible. I am aware it might be difficult to find time for such a class without interfering with purely clinical work; but after all, what is this subject but a special branch of clinical medicine and surgery which, from its size and growing importance, is being forced into special hands? I am sure that were such instruction compulsory, we would have a rapid addition to the numbers of that class of medical men who probably do more immediate good in the profession than any other—viz., the thoroughly qualified general practitioner.

Clinical Notes

DISARTICULATION OF HIP-JOINT BY M'BURNEY'S METHOD

By JOHN MARNOCH, M.A., M.B., C.M.,
Surgeon, Aberdeen Royal Infirmary

M. M., a domestic servant, thirty-six years of age, was admitted to the Aberdeen Royal Infirmary on the 16th September of last year, complaining of pain and swelling in the upper and front part of the right thigh. The progress of the swelling had been rapid since she observed it first, which was in the month of May previously, and the pain had become aggravated to some extent. On examination, the front part of the thigh in its upper third was found to be the site of an ill-defined tumour of considerable size, apparently situated on the femur beneath the muscles, and reaching in its upper limit almost to Poupart's ligament. There was no fluctuation, no pulsation, and no elevation of temperature. The latter symptoms, combined with the rapidity of growth, led to a diagnosis of sarcoma, and it was decided to disarticulate at the hip-joint.

Operation—A preliminary incision into the tumour having confirmed the diagnosis of sarcoma, the abdomen was thereafter opened by an incision through the linea alba midway between the umbilicus and symphysis sufficiently large to admit the hand, and the common iliac artery on the right side found and compressed by an assistant. Skin flaps, short anterior and long

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posterior, were next formed on the thigh and dissected up, after which the muscles were divided circularly close to the joint, and the bone sawn through just below the trochanter major. Separation of the remainder of the femur completed the disarticulation. The vessels were thereupon ligatured, and the flaps stitched and drained, and finally the abdominal wound was closed. The condition of the patient as regards shock after operation contrasted very favourably with that of another female patient somewhat younger on whom an amputation through the middle of the thigh had been performed a short time previously. Some suppuration took place in the amputation flaps, but the patient made a good recovery.

Remarks.—The above method of disarticulation at the hip-joint by opening the abdomen and compressing the common iliac artery is the plan suggested and practised by M'Burney, except that he advises that the abdominal incision should be the "gridiron" one in the iliac region as in the operation for appendicitis. It seemed to me, however, that the abdominal cavity could be opened more rapidly through the linea alba. By his method the circulation, both anteriorly and posteriorly, is completely controlled during the disarticulation and very little blood is lost. Not only so, but when the main vessels have been secured, pressure on the common iliac artery can be taken off and reapplied with such rapidity that the smaller bleeding points are at once revealed and clamped with the smallest possible hæmorrhage. Another advantage of M'Burney's method is that the operator is not hampered in his manipulations by the presence of skewers, mattress needles or tourniquet near the field of operation. As against these advantages may be set the risk of abdominal sepsis, but this risk nowadays is practically infinitesimal. The little extra time consumed in making and suturing the abdominal wound is more than compensated for by the complete control obtained over the circulation. I may mention that the common iliac artery can be compressed in this way throughout the whole operation without the slightest fatigue.

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NOTE ON SECURING THE LINGUAL ARTERY IN EXCISING THE TONGUE THROUGH THE MOUTH

By CHARLES W. CATHCART, F.R.C.S.,
Surgeon, Royal Infirmary, Edinburgh

THERE can be little doubt that securing the lingual artery is the main difficulty in excision of the tongue, and that the risks both at, and after the operation, are greatly reduced when bleeding into the mouth during its performance can be kept at a minimum. It would not be difficult to show that most, if not all, of the past as well as the present methods of excising the tongue have turned very much upon this difficulty. While many surgeons now adopt a preliminary ligature of the lingual artery through the neck, there are still a large number who for various reasons do not think this procedure generally advisable. On the other hand, for those whose experience is limited, the operation through the mouth without preliminary ligature is a matter of considerable anxiety. By a slight modification, however, of the existing method of excising the tongue through the mouth with scissors, I find that the artery can be secured at an early stage of the operation at the same level as, and with no more difficulty than in the operation of preliminary ligature through the sub-maxillary triangle.

The first stage is that usually adopted to permit of the tongue being drawn well out of the mouth, *i.e.* the jaws are opened widely, the tongue drawn forward with a stout silk suture in each half, the mucous membrane divided along the middle line of the dorsum, behind the growth, and between the tongue and the jaws; the tongue split; and the fibres of the genio-hyoglossus snipped through close to the symphysis.

The second stage is that of ligature of the lingual artery thus: with a few vertical strokes of a director or other blunt instrument, the anterior edge of the hyoglossus muscle is defined at the junction of the posterior and middle thirds of the tongue. The director is then insinuated beneath it, the tissues being separated with the point before it is pushed on. The muscle is next carefully cut through on the director for about two-thirds of its extent, and the fibres retracting leave the artery at the bottom of the wound covered only by a little connective tissue. With the point of a director the vessel can be easily defined as a bluish white cord and traced downwards and backwards. An aneurism needle should be passed under it well back, and the vessel tied before it is cut. After the artery

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has been ligatured and divided, a few snips should be made with the scissors radiating out from it into the substance of the tongue. This lessens the chance of one's cutting the artery again when finishing the operation.

The third stage consists in completing the operation with scissors cutting wide of disease.

This method has the following advantages over the usual operation through the mouth where the artery is left to the last, *i.e.* ease in securing the lingual artery, diminished bleeding from small vessels, and in consequence, greater certainty in cutting wide of the disease. The neck is moreover left intact for the subsequent removal of all the glands, as recently recommended by Mr Butlin.

In cases where the disease has become very extensive, preliminary ligature of the lingual artery behind the hyoid bone would be preferable, but the majority of cases that present themselves nowadays for operation would probably be quite suitable for this method of ligature through the mouth.

Obituary

Robert Peel Ritchie, M.D., F.R.C.P.E., F.R.S.E., etc.

It is with feelings of the deepest regret that we have to record the death of one of the best known and best beloved of our Edinburgh physicians, Dr Peel Ritchie, who died at his residence, 1 Melville Crescent, on the 10th of February.

Dr Peel Ritchie was a son of Mr Robert Ritchie, C.E., an authority on ventilation and for some time one of the Magistrates of Edinburgh. Dr Ritchie was born in 1835, was educated at the Edinburgh Academy and University, and spent all his life in his native city, except a short period during which he was Resident Physician at Bethnal House Asylum, London.

As the result of his experience in London Dr Ritchie published an "Enquiry into a frequent cause of Insanity in young men," which at once stamped him as a man of accurate observation and great natural sagacity. On his return to Edinburgh Dr Ritchie speedily acquired the confidence of the public, and for many years was in the enjoyment of a large practice until the advancing infirmities of age necessitated its curtailment. Dr Peel Ritchie was a many-sided man of great natural ability and force of character; he was warmly attached to the Established Church

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of which he was a keen defender, and for many years up to the time of his death he was a member of the Session of St Cuthbert's. He was long closely identified with Poor-Law administration in the city, and to the last there was no more useful or capable member of the City Parish Council. Dr Ritchie was formerly Physician to the Royal Hospital for Sick Children, and continued to the last to be one of its Consulting

DR PEEL RITCHIE.

Physicians. For a time he also lectured with much acceptance on the Diseases of Children. A member of the "Æsculapians," the most exclusive social medical club in Edinburgh, and a Fellow of the Royal Society, its most scientific association, Dr Ritchie was always a welcome member of the many medical, scientific, and charitable associations with which he was connected, and in whose proceedings he always took a prominent part. A keen Conservative in Politics, he was not so in Medicine, as he was an early, warm and constant supporter of Dr Jex-

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Blake in all her endeavours for the emancipation of women and their admission into the medical profession, and his wise counsel will be much missed at the Board of Management of the Bruntsfield Hospital for Women and Children which Miss Jex-Blake founded before she left Edinburgh.

Dr Ritchie was formerly Physician to the Royal Public Dispensary, and he always took a very warm interest in all its affairs, and was chairman of the visiting committee at the time of his death. For a period of five years he was one of the Managers of the Royal Infirmary, and to the last he was a member of the Committee of Contributors. He was not a very voluminous author, but all his writings are characterised by a most painstaking accuracy and comprehended a wide range of subjects, all of them bearing on the well-being of his fellow-men, from the story of the "Remedies used by the Caffres to prevent blood-poisoning in Anthrax," to an enquiry into the prevalence and prevention of Tuberculosis, a subject in which he took a deep interest. To his own College Dr Peel Ritchie was a most loyal son. For many years he was its Treasurer, and for his valuable services in this capacity the College presented him with a handsome gift of silver plate. For the usual periodof two years Dr Ritchie occupied the chair of the College as President, and was subsequently its Vice-President. But the love he bore his College and the deep interest he took in all its endeavours to advance medical science and to benefit mankind are commemorated in a memorial *ære perennius* which he has entitled "The early days of the Royal College of Phisitians, Edinburgh." This handsome and most interesting volume is an expansion of Dr Ritchie's oration as Chairman of the Edinburgh Harveian Society on its 114th anniversary. In this history we have a most graphic account of the foundation of the College, of the early history of the world renowned Medical School and University of Edinburgh, and of its various medical charities. And to this a human interest is given by pointing out the influence of the discovery, writings, and teaching of Harvey upon the advancement of medicine in Great Britain, the whole being inwoven with the biographical histories of the first six medical Knights of Edinburgh. And to this there is this touch of pathos superadded, that in two of the illustrations of this work the figure of Dr Peel Ritchie himself—"in the old likeness that we knew"—is introduced as pointing out the last resting-place of two of his illustrious predecessors.

Dr Ritchie had the misfortune to lose his wife a few years ago, but is survived by two sons, one of whom is an officer in His Majesty's Navy and the other a member of his own profession.

G. W. B.

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Editorial Notes and News

The R.A.M.C. MR BRODRICK'S reception of the criticism on the composition of the Advisory Board was by no means sympathetic. It is a pity that Mr Black, who put a question in the House of Commons on the subject, had not been better "coached," for the enquiry whether the Board "contained any professor from a Scottish university," was open to the very obvious reply, that the Medical Professors in the Scottish universities were too much absorbed in their teaching to accept an appointment which involved repeated journeys to London.

Mr Brodrick, however, did not make this retort, but contented himself by repeating his opinion that Scotland was quite adequately represented by Dr Galloway. The point which he apparently fails to apprehend is, that if he wishes, as presumably he does, to encourage the graduates of the Scottish Schools to enter the Service, the good-will of their teachers must be secured.

We trust that the Scottish Universities and Corporations will not accept Mr Brodrick's simple *non possumus*, but will persevere in their endeavour to secure adequate representation. Mr Brodrick may think that Dr Galloway adequately represents the teachers of Medicine in Scotland. The teachers of Medicine in Scotland think differently, and surely they ought to know.

Notification of Consumption. LAST year the Town Council of Edinburgh adopted the Imperial Notification Act, in place of their own, which had been in force since 1879. It is understood that the object of this was to make it possible to add to the existing list of notifiable diseases, and that especially Consumption was in the minds of the Public Health Committee.

The question of the addition of Consumption to the notifiable diseases came formally before the Council recently, when a motion to make it compulsory received 10 votes, as against 20 in favour of an amendment approving of voluntary notification. The evening papers subsequently published the views upon the subject of voluntary notification of some prominent experts, who all expressed what is probably the general opinion, that voluntary notification would be a farce.

That 10 members of the Town Council should have voted in favour of making the notification of Consumption compulsory is striking evidence of the march of progress in this matter, and no doubt the day is not far distant when they will have converted a sufficient number of their fellow Councillors to carry the point.

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The movement is attracting attention everywhere. Dr Flick, in the *Maryland Medical Journal*, says: "Prevention of the disease is not only practicable, but easy; the keynote to prevention is control of the host; the whereabouts of the host can only be known through registration; opposition to registration is based upon false notions, fancy and sentiment; for a comprehensive scheme of prevention governmental interference is necessary."

But even in America things are not always done rapidly. Prof. Osler, speaking at a meeting held in Baltimore on Jan. 28th, said, "the remedy was very simple and easy: but *it would not be obtained for years, because the people would not wake up.* There should be notification to the Health Department and a careful inspection of cases. This could be done without the slightest hardship to anyone—quietly, easily, and with no placarding or making of the patient a social outcast. There should be a civic sanatorium, near the city, for curable cases, and a place for advanced cases that could not be taken care of at home, and were a menace to the community."

Notification of Measles.

THE adoption of the general act has had an effect which was probably not at first contemplated, for, by its adoption, Measles, which has been a notifiable disease in Edinburgh for 22 years, now ceases to be so.

During these 22 years 77,000 cases of Measles have been notified in Edinburgh, and 2725 have proved fatal, equivalent to 40 per cent. of the total death-rate from infectious diseases.

Quite apart from the value of the statistical and epidemiological information, which has thus been made available, it seems unfortunate that anything should be done which might encourage the public and certain scholastic authorities to look upon Measles as a relatively unimportant disease.

Edinburgh was the pioneer in the compulsory notification of disease, and it seems a pity that it should now take a backward step. If the question of expense seriously weighs with the Town Council, we are quite sure that the profession would be ready to meet them in considering plans for modifying that. The Medico-Chirurgical Society have petitioned the Town Council to continue the notification.

Pathological Reports.

THE attempt of the trustees of the Usher Institute to have the reporting on the City's pathological products transferred to their Institute from the Royal College of Physicians Laboratory, has failed.

A largely attended meeting of the profession was held on

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Saturday, 15th February, in the Royal College of Physicians —Professor Fraser, President of the College, in the chair. There was a general expression of satisfaction with the conduct of arrangements in the past, and stress was laid upon the fact that the profession in Edinburgh had entire confidence in the Staff of the Laboratory. Since then the Public Health Committee has decided to recommend that no change should be made at present. It is understood that the City contemplates a Bacteriological Laboratory of its own, in which these investigations shall be made, but until that is established, it would have been a most undeserved slight upon the College of Physicians, to have transferred the reporting from a trusted and experienced laboratory to another which is merely in its initial stages.

Treatment of Incipient Mental Disease.

THE proposal to establish a department for the treatment of incipient cases of mental disease in the Royal Infirmary is being pushed actively forward. Everyone seems to admit that it would be an admirable thing. Indeed we think that it would be more likely to be carried out if there were a little more opposition. It is when a project, such as this, comes down to the details, that the difficulties begin to arise, and there are a good many obstacles to overcome before the Clinique is an established fact. It is however encouraging to notice the favourable attitude of the lay press toward the proposal.

Appointment.

DR J. C. DUNLOP has been appointed Assistant Medical Adviser to His Majesty's Commissioners of Prisons in Scotland

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Glasgow and its Health Department.

A SPECIAL committee of the Glasgow Town Council, to consider the friction in the Health Department, has just issued its report. The friction is the old question between the Medical Officer of Health and the Sanitary Inspector and is no new thing in Glasgow. The report is a long one, and winds up with the extraordinary recommendation that a second Medical Officer of Health should be appointed as the supreme and responsible head of all branches of the Public Health Department.

There are presumably reasons for this proposal, but after all it only emphasises the fact, that in Health matters there must be one supreme authority, and that that authority must be the Medical Officer of Health.

If the committee had only studied the regulations laid down by the Local Government Board defining the respective duties

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of the Medical Officer of Health and the Sanitary Inspector, they would probably have found a simpler method of arresting the friction.

Curling.

LAST year the match between the Royal Colleges for the Chiene Cup nearly terminated in the water, and had to be abandoned. This year, in spite of the apparently inevitable thaw, the match was played to a finish, and the Physicians successfully defended their possession of the cup. The match was played, as usual, on the Asylum pond, and, as usual, Dr Clouston hospitably entertained the teams.

R. C. P.		R. C. S.	
James Carmichael.		George Mackay.	
R. Lucas.		Wylie Clark.	
Lewis C. Bruce.		F. Cadell.	
T. S. Clouston.	—23	John Chiene.	—19
G. H. Melville Dunlop.		Harold J. Stiles.	
F. D. Boyd.		James Hodsdon.	
Norman Walker.		J. V. Paterson.	
F. W. N. Haultain.	—21	David Wallace.	—18

Majority for the Physicians, 7 shots.

Shorthand.

THE Society of Medical Phonographers will hold its next annual shorthand examination early in May 1902. Two prizes will be offered, each of the value of £5, one for first-year students and one for students of more than one year's standing. The competition will be open without entrance fee to any registered medical student in the United Kingdom who has not taken a first prize at one of the Society's previous examinations. It will be held simultaneously in London, Edinburgh, Dublin, and at any provincial medical centre in the United Kingdom at which not fewer than three candidates shall offer themselves.

Intending candidates should send in their names as early as possible to Dr P. G. GRIFFITH, Bonhams, Farnborough, Hants, who will furnish them in return with a detailed prospectus of the examination.

The *latest date for receiving entries* will be April 15th, 1902.

Gunning Celtic Prizes of the Caledonian Medical Society.

PRINCIPAL RHYS, Oxford, and Professor Mackinnon, Edinburgh, the adjudicators, have awarded the first prize of £20 to Dr H. Cameron Gillies, London, for his paper on "A Gaelic Medical Manuscript of 1583," and a second

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prize of £10 to Mrs K. W. Grant, New Zealand, for a paper on "The Influence of Scenery and Climate on the Poetry and Music of the Highlands."

The papers will be published in the *Caledonian Medical Journal* for April and July 1902.

THE quarterly examinations of the Royal College of Physicians, Edinburgh; Royal College of Surgeons, Edinburgh; and Faculty of Physicians and Surgeons of Glasgow, in Edinburgh, were concluded on February 1st, with the following results:—

First Examination, Four Years' Course.—Of three candidates entered the following two passed the examination:—John Quin Donald, Edinburgh, and Donald Burrows, India.

First Examination, Five Years' Course.—Of eighteen candidates entered the following six passed the examination:—John William Pell, London; Mutyala Sriramulu Naidu, India; John Lawrence Power, Cork; Arnold M'Millan, Belfast; Major Moody, Crewe; and William Robson Miller, Shotts; and one passed in Physics, seven in Elementary Biology, and three in Chemistry.

Second Examination, Four Years' Course.—Of nine candidates entered the following six passed the examination:—John Quin Donald, Edinburgh; Henry Leighton Jones, Australia; Donald Burrows, India; William Gerrard, Edinburgh; John Coulter Warwick, Belfast; and Richard Hewson Hunter, Sheffield; and one passed in Physiology and one in Materia Medica.

Second Examination, Five Years' Course.—Of twenty-six candidates entered the following twelve passed the examination:—Mutyala Sriramulu Naidu, India; James Dow Kennedy, Ibrox; Terence Owens, Calcutta (with distinction); Thomas Francis Murphy, Cork; Nicholas Daunt Sweetnam, Cork; William Hawkley Woodger, Newcastle-on-Tyne; David Edward Anderson Buchanan, Australia; Dennis Cregan M'Cabe Dallas, India; David Arnold Hastings, County Derry; John Wylie, Glasgow; Timothy Archdeacon, County Cork; and James Reginald Purcell, County Meath; and one passed in Anatomy.

Third Examination, Five Years' Course.—Of twenty-four candidates entered the following seven passed the examination:—Kaikhusru Dadabhoy Contractor, Surat; Hastings Footman Everett, Ipswich; Coduri Venkt Ratnam Naidu, Hyderabad; John Gilbert Heathcote, Manchester; Henry Doig, Glasgow (with distinction); John Walker, Galston; and Edward Graham Taylor, Glasgow; and two passed in Pathology and five in Materia Medica.

Final Examination.—Of sixty-nine candidates entered the following thirty-three passed the examination, and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P. and S.G.:—Robert Ellsworth Turner, Rock Ferry; Thomas Huston, Carrickfergus; Ernest Hamilton Kenny, Whitwell; William Ernest Graves, Dublin; Wilfrid M'Farlane, Edinburgh; Harry Bertram Connell, Swindon; Jessie Eleanor George, India; Emma Taylor, Accrington; William Barclay, Kilbirnie; Samuel Arnold Sittampalam, Ceylon; Stanley Rivers, Greenwich; Grace Eleanor Soltau, Ilford; John Henry O'Sullivan, Queenstown; Hermann Aspinall, Wigan; Louis Edward Staynes, Leicester; Robert George Campbell, Belfast: Percival Frank Manchester, Melbourne; Miles Johnston, South America; Edwin Wrigley Kemp, Horbury; Robert Chisholm, Assam; Charles Leopold Mandl, New Zealand; George James Harman, India; Kaikhusru Dadabhoy Contractor,

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Surat (with honours); William Hunter, Sunderland; Charles Edward Marshall, Dunedin, New Zealand; Sobha Ram Kapoor, Lahore; David Robert Rees, Carmarthenshire; George Goldfoot, Liverpool; Coduri Venkt Ratnam Naidu, Hyderabad; Kathleen Bonnar, Monadabad; John Joseph M'Nicholl, County Derry; Walter Beck, Belfast; and Richard Murphy, Cork; and fifteen passed in Medicine and Therapeutics, seven in Midwifery, and eight in Medical Jurisprudence.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

SOME RECENT LITERATURE ON DISEASES OF THE KIDNEYS

By FRANCIS D. BOYD, C.M.G., M.D., F.R.C.P.Ed.,
Assistant Physician to the Royal Infirmary, Edinburgh

TILL very recently inflammatory affections of the kidney were regarded by the physician as quite outside the field of surgery, but this cannot now be considered as the universal opinion. Harrison (*Lancet*, 1896) was the first to advocate incision into the kidneys in cases where there was evidence of increased tension in the organ. He reported three cases where on exploration for calculi, etc., the organ was found markedly congested. The organ was incised. The urine which before operation had been albuminous rapidly became free from albumin.

Harrison was followed by Israël of Berlin, who concluded from his experience that incision in many instances favourably influences any inflammatory process in the kidney.

Poussen, in a paper in which he examines the literature of the subject and contributes three cases of his own, regards the kidneys from the same standpoint as the other double organs such as the eye or the testicle, and concludes that if one is diseased it should be attacked. In one of his cases the patient suffered from dropsy, dyspnœa, gastro-intestinal symptoms, and all the well recognised evidence of uræmic intoxication. Nephrotomy was performed on the kidney supposed to be diseased, and a portion removed at the time of the operation showed typical interstitial nephritis. The patient improved slightly, but as the wound healed the uræmic symptoms returned, from which the author concludes that his intervention had been insufficient and proposes in similar cases invariably

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to extirpate the affected kidney. Poussen minimises the difficulties of forming a just conclusion as to the functionating power of the second kidney. No doubt our methods have greatly improved within the last decade, and much can be done by differentiating the secretion of the two kidneys. But even with improved methods it is not a simple matter to certainly exclude bilateral disease in tuberculosis of the kidney, much less in chronic interstitial nephritis, such a one-sided restriction being indeed unknown to the pathologist. It is to be hoped, therefore, that in the interests of humanity, few cases of chronic interstitial nephritis may come under such radical treatment.

Pel (1) of Amsterdam points out that the cases where incision of the capsule of the kidney has been followed by benefit are those which showed symptoms of one-sided colic, severe bleeding, tenderness and swelling of one kidney, and fever. Cases of nephritis recognised as such are in a very small majority of those where benefit has resulted. He finds that indication for incision of the kidney is found in anuria with severe pain, or in the intensity of the bleeding. It would appear he considers that in a certain limited number of cases incision of the capsule, or of the kidney substance itself, was justifiable where the occurrence of diuresis meant life to the patient, and when diuresis was unattainable by internal remedies. A one-sided nephrotomy relieves pressure, and is followed by a diuresis, which relieves the other kidney. Such cases, however, are seldom encountered. Korteweg (2) of Leyden recounts such a case. The patient, a young man of 23 years, had suffered from recent gonorrhœa. He was suddenly seized with suppression of urine. There was marked pain in the loins. The kidneys were enormously swollen and palpable, the left forming a large tender mass in the loin. An incision was made in the left loin, and the organ was found enormously swollen, dark red in colour, and intensely hard. It was found impossible to reach the pelvis of the organ for exploration. Incision of the capsule resulted in copious bleeding. During the next twenty-four hours a litre of clear urine was evacuated. The diuresis continued for six days, when some minute calculi were discharged. A trace of albumin and a few tube casts were present in the urine in the early days after operation. Korteweg considers that the patient suffered, not from nephritis, but from slight pyelitis and ureteritis. The minute calculi could not pass the diminished lumen of the swollen ureter. Incision relieved the congestion, diuresis set in, and the calculi were washed into the bladder.

From a general view of the literature of the subject, one would be inclined to say that incision of the kidney is justifiable

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in acute nephritis, when there is anuria which will not yield to venesection and the various means of treatment which we have at present at our disposal, but that the cases where incision is advisable are very few in number. Incision of an acutely-inflamed organ will relieve tension more rapidly than any other means. It is doubtful if local means of depletion have any appreciable effect upon the kidney circulation; that they have has been denied by competent observers. But clinically the connection between the skin and the kidney seems very intimate. Every physician is familiar with the evil effects which a sudden chill to the surface of the body will produce in the course of an attack of acute nephritis, suppression of urine resulting. Again, venesection at times produces surprising results. The writer has seen the urinary secretions rise from 18 oz. in twenty-four hours to 120 oz. following on a single blood-letting, in a case of nephritis with cardiac implication. These means having been tried and having failed, incision of the kidney may become a justifiable and desirable operation.

Debove (3), discussing the etiology of parenchymatous nephritis, questions the view that a chronic nephritis cannot arise out of an acute infection. He considers that an acute infective disease may be followed by an alteration in the blood which may initiate and maintain a progressive affection of the kidneys. Such a condition he finds in lactescence of the blood serum, a phenomenon recognised by Bequerel and Rodier as frequent in affections of the kidney. This lactescence has been produced experimentally in animals. Castaigne from a number of observations finds that lactescence while at times present when the urine was not albuminous, is fairly constantly present when there is a kidney lesion. Lactescence is due, according to Widal and Papillon, to the presence of small, highly refractile granules. The granules are soluble in a mixture of alcohol and ether, and are formed of fatty bodies allied to the fats (lecithin, soaps, neutral fats and fatty acids). They regard lactescence as a phenomenon resulting from the fatty degeneration and disintegration occurring in leucocytes. This lactescence of the serum is almost constant in parenchymatous nephritis, but rare in chronic interstitial nephritis. It occurs also as the result of infectious disease such as typhoid fever, acute tuberculosis, pneumonia and malignant pustule. In the case which Debove quotes, the patient, prior to any kidney trouble, had suffered from an attack of broncho-pneumonia, and the author regards it as probable that as the result of the infective broncho-pneumonia, lactescence of the blood serum was present, which had a causal element in the production of chronic parenchymatous nephritis.

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Bujniewiez (4) contributes from a clinical standpoint some observations on the vexed question of the physiology of the secretion of urine. The patient suffered from a urinary fistula. The urine of the sound kidney was excreted by the bladder, the urine of the diseased organ by way of the fistula. The urine of the two kidneys could thus be examined separately and he could estimate the amount, the proportion of chlorides, the freezing point, and the lowering of the freezing point as due to non-diffusible salts. His results show that, notwithstanding a smaller excretion of chlorides from the diseased kidney, the proportion of diffusible to non-diffusible salts was greater on the diseased side. On extirpation it was found that the glomeruli of the affected kidney were intact, but that the tubules were degenerated. The author concludes that his observations show that it is in the tubules that the interchange takes place between the diffusible and non-diffusible salts.

To-day the law of Traube that interstitial nephritis is constantly associated with hypertrophy of the left ventricle stands where it did when enunciated. The explanation of the hypertrophy is debated, but the existence of the hypertrophy is undisputed. There are, of course, exceptions to this as to most laws, but these exceptions only amount to 7 per cent. of the total cases of interstitial nephritis, and these exceptions we find in senility, tuberculosis, and cachexias.

Bouveret (5) records a case which, however, comes under none of these headings. A young woman, 22 years of age, died of uræmia. The heart was found *post-mortem* to be normal, while the kidneys showed extreme atrophy. The aorta was found to be small, with a reduced diameter, as is met in chlorotics. There was no tuberculosis and no cachexia. The patient had been in good health up to the time of puberty, when she became anæmic. When she came under Bouveret's care, she was suffering from chronic nephritis in the last stage, with œdema.

The author has collected eighteen cases besides his own, and from them he concludes that the vascular aplasia forms the obstacle to the hypertrophy in hearts, which otherwise, were exposed to a pathological influence tending to hypertrophy. The heart has, under these conditions, lost the power of responding to the pathological stimulus. In the record of all the cases of interstitial nephritis in persons with congenital vascular insufficiency, one is struck with the rapid course of the disease ending in fatal uræmia. In slowly developing interstitial nephritis the cardiac hypertrophy plays a partly salutary rôle. The hypertrophy raises blood pressure and increases the secretion of urine.

In the region of urinary therapeutics urotropin continues to

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attract attention. Götl and Salus (6), in discussing its powers, find that it is a good antiseptic, and has a much greater influence if the temperature be raised. Thus a ½ per cent. solution at 37° C. has as energetic an antiseptic action as a 2 per cent. solution at 17° C. The literature lately published on urotropin is extensive, and tends to show that the drug is a valuable one in bacterinuria, especially in infection of the urinary tract with bacillus typhosus. The beneficial action in acute gonorrhœal infection does not appear to be well established, but in chronic gonorrhœal cystitis, and in mixed infection with alkaline cystitis, the urine is rendered acid, and in many recorded cases rapid recovery has taken place.

LITERATURE.

1. Pel, *Mittrilungen aus den Grenzgebieten der Medicin und Chirurgie*, Bd. viii. S. 443.
2. Korteweg, *Ibid*, S. 598.
3. Debove, *Gazette des Hôpitaux*, No. 9, 1902.
4. Bujniewiez, *Physiol. Russe*, 1901.
5. Bouveret, *Lyon Médical*, No. 27, 1901.
6. Götl und Salus, *Praguer med. Wochenschrift*, 1901, No. 31.

A Fourth Disease?—The difficulty of making a certain diagnosis in some atypical cases of scarlatina, measles, and rubella is well known. Dr Clement Dukes, who has exceptionally good opportunities of seeing these diseases (among the boys at Rugby), formed the opinion that there is a "fourth disease" not previously differentiated. He is supported in his view by Weaver, Ashby, Poynton, and Sir William Broadbent. Dr Claude B. Ker contributes to the *Practitioner*, for February 1902, an able and judicial article on the diagnosis of atypical cases of these diseases, with special reference to the possible existence of a "fourth disease." In the elucidation of the subject Dr Ker first defines typical cases of scarlatina and measles, then considers the symptoms of rubella, with the view of ascertaining whether there may be two or more diseases included under this name. He refers to septic, medicinal and digestive rashes, also to relapses and second attacks. We agree with him that the occurrence of relapses and of second attacks of most infectious fevers is certainly established. He rightly points out that in these diseases the rash is only one of several symptoms, all of which, and also the period of incubation when it can be defined, should be duly weighed before forming a diagnosis, and that an examination of the exanthem alone may easily lead to error. When we consider the complex anatomical structure of the skin, the great variety in its constitution and

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sensibility in different individuals, the wonder is, not that atypical diseases occur, but that they are not more frequent. In measles the colour of the rash is largely determined by the extent to which the respiratory tract is involved. Probably in no class of cases is there greater variety of rash than in those due to septic absorption from digestive disorder. These occasionally cause difficulty in diagnosis. Dr Ker has with open mind studied the large amount of material at his disposal, and although he does not say that a "fourth disease" does not exist, he states that the evidence of its existence is not sufficiently convincing, and he brings in a verdict of "not proven." The paper is well worthy of careful perusal by all who are in general practice, and by those in charge of fever hospitals.

J. R.

SURGERY

GENITO-URINARY SURGERY

By DAVID WALLACE, C.M.G., F.R.C.S.Ed.,
Assistant Surgeon, Royal Infirmary, Edinburgh

Movable Kidney.—The fifth session of the *Association Française D'Urologie* was held at Paris in October of last year under the presidency of Professor Guyon, and in the transactions recently published the subject of *Movable Kidney* from the side of etiology, symptomatology and treatment, occupies nearly 200 pages of the volume. Several well-known men, including Guillet, Glenard, Landau, Albarran, Chevalier and Lequeu, read papers on the subject, and a *résumé* of their views upon this interesting and important condition seems justified. It may be said that there was great divergence of opinion upon the etiology of the condition, while with regard to its hurtful influence upon the individual and the necessary treatment most of the speakers, if we except Landau, were in agreement. All agreed that movable kidney is a common affection in women and rare in men. Lequeu gave the percentage of occurrence in women over twenty-five years of age as 45 per cent., while Glenard stated it was 22 per cent. Either of these certainly seems a high percentage, and the degree of mobility, recognised to be abnormal, must have been very small; but the statistics given by others went towards at least 20 per cent. That the right kidney is much more frequently affected than the left was also admitted, Guillet giving the relative proportion as 80 to 90 per cent. of right, unless both are movable, when the relative percentage does not vary so much. This means that mobility of the left kidney

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alone is not common, and coincides with the writer's experience. Indeed when the left kidney has alone been affected there has usually been a discoverable cause as, for instance, traumatism, or an intrinsic pathological condition.

Guillet, who read the first paper, prefaced the consideration of the etiology of abnormal mobility by discussing the anatomical factors which maintain the normal position, and laid particular emphasis upon the renal capsules, which he groups into three—the capsule proper, the perirenal fat, and the fibrous. He believes that fixation is mainly due to the last. No one of the speakers who refer to anatomical causes alludes to Cunningham's view that the clasping action of the ribs is important, but attention is directed to the hollow in which the kidney lies, and it is pointed out that the hollow is not so marked in women as in men, and that in the female it is wider inferiorly. With regard to theories explaining mobility based on anatomical lesions of the kidneys or neighbouring organs, Guillet expresses the view that no one, or all of them combined, has much bearing on the subject. Length of vessels he thinks a result, not a cause. Atrophy of perirenal fat is often absent. Glenard's view that relaxation of the abdominal walls is the cause, in part at least, of enteroptosis, of which mobile kidney is merely a concomitant, Guillet thinks is an exaggeration of a theory and not applicable to the majority of cases. So too he dismisses enlarged liver as a cause. He rejects, then, the anatomical causes which have been advocated, and passes to consider the physiological theories, they in their turn being also rejected. Thus multiple pregnancy is not the cause as the condition is as frequent in nulliparæ. Menstruation cannot be supposed to be a chief cause of the condition. The use of the corset is not the cause as Arabs don't wear corsets, and yet Trekaki in 100 Arabian women found 42 instances of mobility of the kidney. Next he passes to consider the hereditary theory which is strongly advocated by Albarran. This view is founded on the assumption that there is a congenital feebleness of the tissues, and the theory has many supporters, but Guillet does not accept it, and in summing up this portion of his paper remarks that no one theory explains mobility of the kidney in all cases. He believes the causes vary, and that in each person certain conditions will be found to predominate as factors producing mobility; these in particular being: (*a*) imperfect support by the anterior abdominal wall; (*b*) enteroptosis; (*c*) immoderate use of the corset; and lastly (*d*), the variations in the size of the kidneys during menstruation.

Pertinently he asks the question, Why is the right kidney more frequently affected than the left? And answers as follows:—

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1. The absence of the fascia of Toldt on the right side.
2. The dragging upon the right kidney by the ascending colon without any counteracting force, while on the left side, through the pleuro-colic ligament of Cruveilheir, such dragging is compensated. These are two anatomical causes out of many to which he refers.

The other speakers lean some to one theory, others to another, but their views may be summed up as follows:—Glenard strongly supports the enteroptosis theory; Albarran and Chevalier, the hereditary weakness of tissue theory; Landau, the sudden loss of fat, more especially the perirenal; while Delbet advocates the view that the origin is invariably, apart from cases produced by trauma, due to uterine affections which secondarily infect the connective tissues which support the kidney. The last author does not, however, attempt to explain why the right should be so much more frequently affected than the left.

This portion of the subject is left in much the same position as heretofore, viz., that no one cause can account for renal mobility, and the views of Guillet seem to represent very fairly the present position of our knowledge of the subject, provided we accept the anatomical reasons he gives as a correct explanation of the relative infrequency of the left kidney becoming mobile. It will be of importance in this connection to determine in the future whether, in those cases where both kidneys are mobile, enteroptosis is present.

Chevalier also discusses the etiology of mobility very fully, but in addition he reviews the indications for operation. He believes a painful mobile kidney is frequently due to strangling of the organ by a kink of the vessels, and ascribes acute pain of sudden onset to this, although in more mobile cases intermittent hydronephrosis may occur, and is a not uncommon cause necessitating operation. He gives a short historical *résumé* of operative procedures, and recognises four conditions due to mobility which necessitate operative interference—

1. Dyspeptic troubles.
2. Neurasthenia.
3. Painful kidney.
4. Intrinsic renal affections, *e.g.* hæmaturia and pyuria, etc.

Chevalier recommends nephropexy in these conditions where the symptoms are severe, but believes that operations are chiefly necessary and beneficial in the two last. At the end of this paper a very full reference to authors who have written upon the subject is given.

Landau does not think operation is often called for, and advocates the more frequent use of a belt as a support to the

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abdomen. He does not describe any special form of kidney pad, and apparently believes general abdominal support equally efficient.

Pousson supports in effect the views of Chevalier. Albarran believes operation to be safe if periods of fever and pain have passed off, and points out that rest in the recumbent posture attains this by permitting the kidney to pass back into its normal position.

Duret of Lille describes and illustrates a case in which, after several years from the date of operation, he had the opportunity to examine the kidney. He had performed nephropexy by the introduction of sutures through the kidney cortex, and tying them to the posterior abdominal wall, and he found that the kidney had remained firmly adherent by a broad band of fibrous tissue. This method of fixation he has found quite satisfactory and of permanent value.

Several of the other speakers confined themselves to reporting one or more cases illustrative of special points in relation to symptoms and treatment.

Careful perusal of this series of papers discovers nothing which places our knowledge of the etiology of movable kidney on a more certain basis, but rather strengthens the view expresed by Guillet that no one cause is sufficient to explain its occurrence; and for the present we must admit that various factors may determine the condition. It seems to the writer, however, that no satisfactory explanation has yet been suggested for the frequency of displacement of the right as compared with the left kidney. The fact that women are so much oftener sufferers than men would point to some anatomical or physiological condition in the former sex which does not exist in the latter. That this is not associated with pregnancy seems evident by the large number of nulliparous women who suffer from nephroptosis. What intrinsic peculiarity exists has not yet, however, been demonstrated.

The immediate success of operation by any one of the numerous methods adopted has induced surgeons to recommend it in those patients who have symptoms attributable to the presence of the condition, but three classes of patients should be recognised: (1) Those in whom no symptoms are present, and where no treatment is necessary; (2) Those in whom the symptoms are not severe, and who gain relief by wearing a well fitted pad; (3) Those in whom the symptoms necessitate operation. In this category we have those cases which suffer from the conditions referred to by Chevalier as indicating the need for operation.

J. Hutchinson, jun. (*Practitioner*, February 1902), reports two

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cases of floating kidney, in each of which the chief symptoms were obstructive jaundice and hepatic colic. He discusses the mechanism of the obstruction, and rejects the view of Dr Weisker that it is the presence of a hepato-renal band which, when the kidney is displaced, drags upon the neck of the gall-bladder. He believes, indeed, that such a band has no existence, and gives as the cause of the condition: "(1) Downward displacement of the third part of the duodenum, with stretching of the common bile-duct; (2) displacement of the gall-bladder and sharp kinking of the cystic duct; (3) torsion of the vertical part of the duodenum and perhaps even of the bile-duct." This is in effect the view of Kendal Franks (*Brit. Med. Jour.*, 1895), who explained the occurrence of gastro-intestinal symptoms, so frequently present in cases of movable kidney, by the duodenum being dragged down, and in one case, as he observed at operation, even having a kink upon it. Hutchinson's cases illustrate the difficulty in diagnosis which may occur, as in both instances the presence of jaundice led to the belief that the condition was primarily hepatic. In one the kidney was mistaken for an enlarged gall bladder, while in the other, although the kidney was recognised, it was not thought to be the cause of the condition. In both cases intraperitoneal operations were performed, but later when the actual cause of the condition was recognised, nephropexy by the lumbar route.

OBSTETRICS

THE TREATMENT OF RUPTURE OF THE UTERUS

By R. G. M'KERRON, M.A., M.D.,
Physician to the Maternity Hospital; Assistant to the Professor of Midwifery in the University, Aberdeen

RUPTURE of the uterus during labour cannot fail to be a subject of interest to the practitioner. Though less common now that the causes which predispose and lead up to it are better understood, it is an accident that may still occasionally be met with. Several recorded cases show that it may occur even in the course of a normal and easy labour, as the result of degenerative changes in the muscular wall of the uterus.

In addition to the publication of numerous cases, several important papers have recently appeared on the treatment of uterine rupture. The number of these, and the divergent views expressed by the writers, make it apparent that the treatment to be selected is still a matter of controversy. Each method

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finds an advocate who gives it priority and preference to all others.

In January 1900, Spencer (*Obst. Trans.*, vol. xlii.) reported four cases of rupture of the uterus successfully treated by packing the tear *per vaginam* with iodoform gauze. Two of these were instances of complete rupture. With the successful results thus obtained he contrasted eight cases treated by other methods — two by abdominal hysterectomy—which had all proved fatal within a few hours from shock, or within a few days from sepsis. Before introducing the gauze, Spencer removed all clots with the hand, and drained the fluid blood from the peritoneal cavity by squeezing it through a long thick rubber or glass tube passed with the hand through the tear, and to this preliminary procedure he attached great importance. He summed up his views in the following propositions—(1) Abdominal section is rarely required, and almost solely in cases where the fœtus has passed completely, or in great part, into the peritoneal cavity. It should be performed rapidly under local infiltration-anæsthesia. (2) Abdominal hysterectomy is hardly ever necessary ; when the broad ligaments are so much damaged as to endanger the vitality of the uterus, vaginal hysterectomy should be performed. (3) All incomplete tears and most complete tears should be treated by packing the rupture *per vaginam* with iodoform gauze after removing clots and fluid blood.

This conservative method, which is strongly recommended by several Continental authorities, Leopold among others, finds a recent supporter in Orthmann, from whose Clinic, Baur (*Gesellsch. f. Geburts. zu Berlin*, 1901) reports two cases which were successfully treated by similarly packing the tear from the vagina.

On the other hand, Iwanow (*Centralbl. f. Gynäkol.*, 1900, No. 26) advocates total extirpation of the ruptured uterus *per vaginam* on the ground of the ease and rapidity with which it can be performed. He adds a third successful case treated by this method to two which he had recently published (*Centralbl.* 1899, No. 2). In his opinion the advantages of vaginal hysterectomy are that it is simpler than the abdominal operation, and attended with less risk of infection and with less shock.

Within the past year several operators have communicated cases of abdominal extirpation of the uterus for rupture, and while some of them would limit this method to cases in which there is dangerous hæmorrhage, or an almost certain risk of infection, others have urged that abdominal hysterectomy should be performed in all cases in which a complete rupture is recognised. I shall refer only to the two most recent communications.

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In the first number of the *Centralblatt f. Gynäkologie* of this year, Törngren of Helsingfors records two cases. One was complicated with rupture of the bladder. Laparotomy was not performed till seven hours after the occurrence of rupture, and two hours after the extraction of the child, which was readily effected after craniotomy. The tear in the bladder and the uterine wound—after some gangrenous portions had been removed—were sutured with catgut, no drain being inserted. The woman died on the following day. In the second case, in which there was no complication, and in which the symptoms do not seem to have been of an urgent character, the treatment adopted was supravaginal amputation of the uterus with drainage through the abdominal wound. An almost completely afebrile recovery resulted. Törngren concludes that, while laparotomy with supravaginal amputation of the torn uterus should be the rule in all hospital patients, this should be limited in private practice to those cases in which there is threatening hæmorrhage, the cases where there is no serious bleeding being treated by tamponnement *per vaginam.*

The other contribution to which I have referred is by Gustav Wiener (*München Med. Wochens.*, Jan. 7th, 1902). He relates two successful cases from the Universitäts Frauenklinik, München, in one of which the tear was sutured, while in the other the uterus was amputated through the cervix. The rule at the Clinic, he states, is to perform laparotomy at once when the injury to the uterus is considerable, and in the case of moderate tears to treat by suture, and in the more serious by supravaginal hysterectomy without in either case using drains.

From the evidence which has been adduced above, it will be seen that the opinions of leading obstetric authorities are still conflicting in regard to the treatment which should be employed in rupture of the uterus during labour. This divergence of view is real not apparent, and to be accounted for solely by the varying severity of the accident or even by the varying circumstances in which it occurs.

Fortunately attempts have recently been made to determine statistically the results of the different modes of treatment, and it will be a satisfaction to the general practitioner to know that the conservative method has been attended with a greater measure of success than the more radical treatment so strongly urged by certain operators.

From an analysis of 271 cases, Forné (*Dissert.*, Paris, 1900) formulates a series of rules for the treatment of rupture of the uterus; but, being unable to obtain his work, I shall confine myself to the elaborate paper which Klein has recently published (*Archiv. f. Gynækol.*, Bd. lxii., H. 2). He reviews

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no fewer than 367 cases which he has collected from the literature of the last twenty years, at the same time adding 14 new cases. From an exhaustive analysis of these he determines the mortality which followed the various forms of treatment. He divides the cases into two groups—(1) those operated on, (2) those treated without operation. Of 149 cases in the first group, he finds that 66 died, or a mortality of 44 per cent. Laparotomy was performed 135 times—in 117 for complete rupture—with a mortality of 44 per cent. The details are sufficient to show that in 64 of these the operation was primary, in 67 secondary—*i.e.* performed after extraction of the child. The mortality of the former was 42 per cent., of the latter 46. There was little difference in the mortality whether the uterus was removed or not. Where not removed, leaving it alone seems to have given better results than suturing the tear, while the supravaginal operation was somewhat more successful than total extirpation. Of 9 cases of vaginal hysterectomy, 2 were carried out with a successful issue after laparotomy, but 4 of the remaining 7 died.

If now we turn to the cases which were not operated on, we find that of 198 cases, 52 per cent. died, but in 73 practically no treatment of any kind was attempted. If these are excluded, there are 125 cases—in over two-thirds of which the rupture was complete—with a mortality of 39 per cent. Of these, 42, which were treated by drainage either with a tube or with iodoform gauze, gave a mortality of only 17 per cent., while of 65 treated simply by tamponnement, 52 per cent. died, and of 18 by douching, 45 per cent.

It will be seen that in rupture of the uterus by far the best results are obtained by drainage; nor can it be assumed that the success of this method was due to the less serious character of the accident, for in 28 of the 37 cases, in which it was possible to ascertain the extent of the injury, the rupture was complete. From a practical point of view this method of treatment is to be strongly recommended owing to the simplicity of its application. It is only, Klein maintains, where serious hæmorrhage threatens that laparotomy is to be thought of, and then it should be done *at once* and on the spot, without the delay of removing the patient to a more suitable environment. In addition to hæmorrhage, he thinks primary laparotomy may be undertaken where, on account of contracted pelvis or insufficient dilatation of the passages, delivery cannot be effected by the ordinary route; but, as a rule, extraction will be possible *per vias naturales* without any special danger even when the fœtus has passed in great part or entirely into the abdominal cavity.

Of the various methods of drainage, that recommended by

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Spencer is, on the whole, the most satisfactory. It is not enough merely to pack the wound with gauze; the abdominal cavity must first be emptied of blood and débris by means of a rubber or glass tube.

Among several other points of practical importance which emerge from Klein's analytical study, is the greater danger attaching to tears which are situated on the anterior wall of the uterus. Here, as might be expected, drainage is not so successful, and better results may be anticipated from hysterectomy.

PUBLIC HEALTH

PURIFICATION OF DRINKING-WATER

By C. J. LEWIS, M.D., D.Sc., F.R.C.P.,
Edinburgh

THE prevalence of water-borne disease, more especially of enteric fever in the South African Field Force, has recently directed much attention to the methods by which drinking-water may be purified and rendered safe for imbibition.

At a conference on Water Supplies and River Pollution, held in October 1901, under the auspices of the Sanitary Institute, Rideal introduced a discussion upon the methods now in use (*Journ. Sanit. Instit.*, January 1902).

Standard of Purity.—The view was advocated that the purity of a water supply should be judged (1) by the typhoid fever death-rate of the district supplied, and (2) by the general bacterial purity of the water. These are valuable considerations, but they fail to realise that enteric fever, though usually water-borne, is not invariably so. A rise in the enteric death-rate might conceivably occur without implying any pollution of the water, and, on the other hand, a water supply might be injurious and give rise to illness without any effect on the enteric death-rate. Some of these considerations were pointed out by subsequent speakers at the conference. With the advance of bacteriological knowledge the standard of purity of a potable water has completely changed. A water which, on chemical analysis, is found to be within the limits of purity assigned to potable waters, may nevertheless be absolutely unpotable owing to the presence of pathogenetic micro-organisms, or may be unsuitable for drinking purposes owing to the large number of non-pathogenetic organisms which it contains. The numerical bacteriological standard of purity laid down by Koch is that a potable water should not contain

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more than 100 micro-organisms per c.c. after filtration. This standard can only be attained by slow filtration, and, taken by itself, is not a sufficient guide any more than chemical analysis alone. In fixing a standard of purity a qualitative bacteriological test is even more desirable than a quantitative one. A potable water should contain no pathogenetic micro-organisms, and not more than a few coliform bacilli, whether typical or atypical. The purity of a water supply is to be judged by (*a*) the nature of the organisms present; (*b*) the number of organisms before and after filtration, and the number of each variety present after filtration; (*c*) the chemical analysis; (*d*) the prevalence in the district of diseases which may be water-borne.

Methods of Purification.—Owing to the change in the standard of purity it is necessary to consider how far the older methods of purification are efficient in attaining the new standard. Open sand filters, originally devised to remove suspended matter, are now known to reduce also the number of bacteria, and to do this not merely by mechanical arrest, but by biological action. Sedimentation in storage and service reservoirs and artificial softening of hard waters also improve the bacterial purity of water. Rideal stated that by careful attention to the combination of sedimentation and filtration a water supply may attain a degree of bacterial purity approximating to that obtainable by other methods, which are only applicable to comparatively small quantities of water. Open sand filters are capable of removing over 99 per cent. of the organisms in water, but allow the passage of a certain number. The question then arises: What kinds of bacteria safely run the gauntlet of sand filtration? Can pathogenetic organisms pass through such filters? In this respect it is probable that sand filters are better than might be inferred from the number of organisms in the filtered water. Rideal mentions that the numbers of B. coli communis are proportionally reduced more than those of ordinary water organisms, and therefore it is probable that B. typhosus would be similarly affected. This is likely to be the case, since in most conditions B. coli communis is much more hardy than the latter organism. The conclusion is that the water supply of a community should be filtered, and slowly filtered: failure to do so removes a great safeguard against the spread of water-borne disease.

The Conference discussed the question whether it is necessary that the whole water supply of a community should be purified to the standard required of a potable water, or whether it would be possible to provide a partially purified supply for cleansing, trade, and other purposes, and a thoroughly purified supply for food purposes. It was suggested that a relatively

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low standard of purity would suffice for all ordinary purposes, and that the water required for food might be sterilised by each household. Rideal estimated the latter quantity at one gallon per head per day, or only two to five per cent. of the total supply, and suggested that it might be sterilised either at the works by means of ozone, or in each house by a heat steriliser or filter supplied by the authorities. Any method carried out at the works on a portion of the water supply implies distribution of the germ-free water by special pipes, and is therefore barred, primarily by the expense of laying and of upkeep of separate systems of pipes, and by the danger of wrong connections being made by workmen; secondarily, by the carelessness in use which would inevitably result in water for food purposes being taken from the wrong tap. The latter difficulty would likewise militate against domestic sterilisation by heat or filter; too frequently the ordinary supply would be used instead of germ-free water. Of the two, the filter would appear most likely to attain its end, since it would cost the consumer less and give him less trouble. All water supplied to households should be purified to such a standard as to be drinkable without risk of disease. In many places, however, it might be possible to use sea water or partially purified water for many purposes, *e.g.* for cleansing streets, instead of drawing upon the highly purified domestic supply. On the whole, sedimentation combined with sand filtration is the most practicable and efficient method for dealing with large water supplies. For rendering smaller quantities of water germ-free the methods available are filtration through special filters, heat sterilisation, and treatment with chemical agents.

Filtration.—Ordinary domestic filters are mostly useless as a means of depriving water of germs. Filters of the Pasteur-Chamberland and Nordtmeyer-Berkefeld pattern are, however, quite efficient. Their disadvantages are that they are slow in action, and only yield sufficient amounts when worked under pressure, are brittle and apt to be injured during cleansing, and require cleaning frequently if the rate of flow is to be maintained. The filters clog speedily if the water to be filtered holds much suspended matter, and has not been previously clarified. This disadvantage does not apply when these filters are used for public water supplies which have already undergone sand filtration. In an article on the purification of water in campaigns, Macpherson (*Public Health*, June 1901) discusses these three methods and the applicability of each to the conditions under which campaigns are conducted. He recommends the single bougie filter as better than filters with numerous bougies, which are heavy, difficult of transport, and

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have more fittings which may fail to be germ-proof. The single bougie pressure-filter is regarded as superior to boiling or chemical agents. It clarifies as well as sterilises water, but to maintain its efficiency skilled attention must be paid to it. The Berkefeld Field Service filter is highly commended; it has a single bougie, short and thick, and is provided with an air-pressure chamber to maintain constant pressure.

Heat Sterilisation.—This may be accomplished by means of open fires or of special apparatus. The former method implies expense, fuel supply, and time; moreover, it provides an unpalatable water devoid of ærating gases. There are three forms of special apparatus in use, designed to use as little fuel as possible, and to cause the sterilised water to part with its heat to the cold water about to be sterilised. The sterilised water is thus rapidly cooled, and a further object of the apparatus is to avoid as far as possible the loss of dissolved gases. Difficulties arise from the loss of heat in working, and from the deposition of lime salts in the tubes of the apparatus. The latter might be avoided in the case of town water supplies by preliminary softening of the water in the storage reservoirs or tanks. The three kinds of apparatus in use are the Vaillard-Demaroux, Maiche, and Waterhouse-Forbes. Macpherson attributes to the latter the power of providing an output equal to either of the others, whilst its weight is very much less. The problem in the domestic use of heat is to find an economical and efficient method.

Chemical Treatment.—Of the numerous chemical agents used to sterilise water, only a few will be here referred to. Powerful chemical sterilisers are mostly poisonous, and therefore inadmissible, and no agent used should add objectionable colour, taste, or smell to the water, while cheapness and rapidity of action are desiderata.

(*a*) *Permanganate of Potash.*—This was recommended by Hankin (*Brit. Med. Journ.*, 1898, i. 205) for use in India as a cholera preventive. It is applied to the water in village wells, the process being known as "pinking" the wells. Dhingra (*Brit. Med. Journ.*, 1901, ii. 414) criticises Hankin's method, and quotes the Sanitary Commissioner to the Government of India to the effect that it "does not much or materially diminish the risk of cholera infection in epidemic times." The permanganate must be in the proportion of at least 5 per cent. in order to have a disinfectant action, and this strength is not attained in the wells. Its action is influenced by organic matter in the water, and it is probably more effectual in oxidising this than in destroying organisms. An acid must also be added to obtain its full effects. Lapeyrère (*La Presse Médicale*, 1900,

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No. 89) uses permanganate in conjunction with carbonates of soda and lime and aluminate of soda to sterilise water, and to precipitate organic matter. The water is subsequently filtered through peat fibre and black oxide of manganese in a metal drum. The filter is light, easy to clean, and not liable to get out of order; no taste is imparted to the water, which is rapidly purified even when not previously clarified. Unfortunately there is some doubt if the sterilisation is as perfect as the clarification. The percentage of $KMnO_4$ is too small to act as a reliable disinfectant. Warner (*Public Health*, 1901, xiii., No. 10, p. 703) describes a laboratory test of this method of Lapeyrère, with tap water to which B. typhosus had been added. The method failed to render the water sterile whether the organism had been added to sterilised or unsterilised tap water. It is therefore incorrect to speak of the method as destructive to the B. typhosus; but if the water had been polluted, and had not previously undergone sedimentation, the powder would have thrown down a precipitate, in which many organisms might have been removed.

(*b*) *Bromine.*—This was introduced by Schumberg (*Pharm. Centr.*, xxxviii. p. 239), and is used, either pure or in solution, with bromide of potassium. The quantity required is ·2 c.c., or ·06 grm. of bromine to the litre of water, and the period of contact required is at least five minutes. Rabs (*Hygienische Rundschau*, Nov. 1901) recommends a longer exposure—even thirty minutes may be required. Next, the water must be rendered clear and palatable by the addition of solution of ammonia, or of soloids of hyposulphite of sodium and carbonate of sodium. Macpherson (*loc. cit.*) considers that the only advantage of this method is the possibility of its use in emergencies by small bodies of men.

(*c*) *Chlorine and Hypochlorous Acid.*—These have been used in various forms—chloride of lime, bleaching powder, chloros, sodium hypochlorite, etc. Hunermann and Deiter (*Deutsch. Med. Wochen.*, 1901, No. 24) advise the use of hypochlorite of sodium as preferable to bleaching powder, quicker and more effectual in action. Ten minutes' exposure sufficed to kill B. typhosus and V. choleræ in water with which cultures had been mixed. For drinking-water the quantity required per litre is such as to give ·04 grms. of available chlorine, and subsequently sodium hyposulphite is added in the proportion of ·14 grms. to ·04 grms. chlorine. The purified water has no obnoxious appearance, taste, or smell, and is not increased in hardness.

(*d*) *Bisulphate of Sodium.*—Parkes and Rideal (*Epidemiological Society Transactions*, "Public Health," Feby. 1901) advocate the use of tabloids of bisulphate of sodium as efficient sterilisers

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of water containing the B. typhosus. The strength recommended is 1 grm. to the pint or 176 parts per 100,000, and 15 minutes' contact is required. The resultant water is somewhat tart but not unpleasant to drink and may alleviate thirst. An objection mentioned by Macpherson is that the tabloids are apt to crumble and deliquesce on the march. The method is now on its trial in South Africa, and further reports may be looked for. Probably it will be found useful in emergencies, but not adapted to permanent camps and large communities. Those who object to the acid taste of the water may increase its palatability by adding a little sodium bi-carbonate. Warner (*loc. cit.*) tested the action of this reagent on certain organisms. Ten minutes sufficed to kill the V. choleræ, fifteen minutes reduced the numbers of B. typhosus considerably, and half-an-hour sterilised water containing that organism or the B. enteritidis (Gärtner). The B. coli was somewhat more resistant than those mentioned. Warner considers the acid water likely to add to thirst rather than to quench it, especially considering the quantity of the salt required to sterilise the whole drinking water consumed for consecutive days and even weeks.

On the whole these chemical methods are valuable in certain circumstances, but not adapted to water supplies of large populations. There is, however, another chemical agent superior in this respect to any of the preceding.

(*e*) *Ozone.*—The method consists in forcing ozonised air through the water, and the air is ozonised by the conversion of some of its oxygen into ozone by means of electricity. Ohlmüller (*Arbeit. a. d. Kais. Gesundheit.*, viii. 228) formerly demonstrated the bactericidal powers of ozone on cultures of typhoid, cholera, and anthrax organisms mixed with distilled water. The air to be ozonised should be dry, but the ozone when formed is only effectual in the presence of moisture. Van Ermengem (*Annales de l'Institut Pasteur*, ix.) describes experiments at Oudshoorn in which foul water was improved physically, and was sterilised if not too saturated with organic matter. The time required and the concentration of ozone vary with different waters and with the degree of pollution. He advises that the air to be ozonised should not only be deprived of its humidity but also of its carbonic acid and dust. The town of Lille appointed a commission to investigate the applicability of ozonisation to the communal water supply. The conclusions of the Commission reported by Calmette (*Annales de l'Institut Pasteur*, xiii.) may be summed up as (1) efficacy incontestable; (2) apparatus simple, durable and reliable; (3) all pathogenetic and saprophytic microbes destroyed except B. subtilis, and of it only a few organisms are

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present in the purified water; (4) the proportion of ozone in the air should be 6 mgrms. per litre; (5) the water is in no way prejudicial to health, its organic matter is diminished and ulterior decomposition is prevented. As a result of this report the method was adopted by Lille, and is now in use both there and in Moscow (Rideal, "Water and its Purification," 1902. Crosby Lockwood & Son). The process is that known as Marmier and Abraham's, and the cost is stated as about a half-penny per 1000 gallons. In order to save the ozone, preliminary filtration is desirable for the removal of grosser impurities.

In conclusion it appears that the purification of drinking water by means of ozone has a distinct future before it, and that this method is likely to come into more general use, especially if economical methods of application can be devised.

Meetings of Societies

Edinburgh Medico-Chirurgical Society

THE fifth meeting of the session was held on Wednesday, 5th February—Prof. T. R. Fraser, the President, in the chair.

Dr Wm. Stewart showed a patient after compound dislocation of the ankle, with fracture of the neck of the astragalus and removal of the outer malleolus.

Dr Byrom Bramwell showed a case of infantilism. The condition was very rare and, so far as Dr Bramwell had been able to ascertain, was not described, though incidentally referred to, in medical literature. The patient, aged $18\frac{10}{12}$, did not look more than 12 years of age. He was bright and intelligent mentally. There was no suspicion of sporadic cretinism or of congenital syphilis. The only apparent cause for the condition was chronic diarrhœa, which had lasted for nine years and which was perhaps due, Dr Bramwell had suggested, to defective pancreatic secretion. Dr Young, house-physician, had by an elaborate investigation, the details of which were communicated to the meeting, proved that the pancreatic secretion was deficient. Under the administration of pancreatic extract the diarrhœa had lessened, the patient had gained half a stone in weight, and had grown nearly half an inch in the course of six weeks. These facts suggested that in this case the arrested bodily development was due to defective pancreatic secretion. The condition of the pancreatic secretion in future cases should be carefully investigated.

Mr Caird showed a patient from whom 80 inches of intestine

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were removed for tuberculous stricture and glandular implication. There had been chronic obstruction, with well-marked ladder-pattern, and loud borborygmi.

Dr Dawson Turner exhibited an apparatus for generating ultra-violet light. Acting on a suggestion of Mr Leslie Miller, he had been comparing the ultra-violet radiation of a Tesla spark gap with that of an arc lamp. His apparatus resembles that which has been in use by Dr Walsham, of London, and Dr Görl, of Nurenburg, and it consists essentially of an induction coil, condenser and a spark gap of two or three electrodes. The ultra-violet radiation of this spark, as tested in his laboratory, is altogether of a higher order than that of an arc lamp, while the heat radiation is almost negligible. Owing to this latter property the light can be brought within an inch or two of the affected part with very greatly increased effect. After a number of experiments as to relative transparency and convenience, Dr Dawson Turner prefers to use pure rock salt as a compressing agent. The clinical results have been exceedingly good, an exposure of 2½ minutes only being amply sufficient to produce a powerful curative effect. A little erythema is produced after the exposure with slight itching and tingling. Physically the spark is about three times as potent in ultra-violet rays as the arc light, while clinically it may be ten to twenty times as effective because it can be brought much nearer and because no cooling stratum of water is needed, and water is opaque to the extreme ultra-violet.

Two patients were also exhibited, one suffering from lupus vulgaris and the other from rodent ulcer. Both had been treated for a considerable time with Röntgen rays with slow improvement, and afterwards with ultra-violet light with rapid improvement. The light had a more powerful effect upon the rodent ulcer than upon the lupus. Five exposures to the light sufficed to cause the ulcer to cicatrise over.

Card Specimens:

Dr Logan Turner—

1. Larynx and trachea from a case of diphtheria.
2. Two specimens of malignant stricture at upper end of œsophagus.

Dr Purves, for Professor Annandale—

1. Ruptured femoral artery and vein from crush of thigh and fracture of femur. Amputation at junction of middle and upper third.
2. Portion of femur removed in second amputation in same case, showing necrosis and ossifying granulations.

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3. Epithelioma of nape of neck removed with cautery.
4. Branched renal calculus.
5. Vesical calculus showing moulding consequent on its position between lateral lobe of prostate and bladder.

Mr Caird—

Tuberculous stricture of intestine (with microscopic preparations).

Drs Gibson and Stuart M'Donald—

1. Spinal cord showing pseudo-tabes syphilitica (with microscopic demonstration).
2. Hæmorrhage into the cusps of the pulmonary valve (with microscopic sections).

Dr Melville Dunlop read a paper on "A Case of Chloroma, with Pathological Report and some Brief Notes on the Condition" (with microscopical sections, photographs, etc.).

The patient, a boy aged five years, was admitted to hospital in September 1901, complaining of great weakness and swelling of the face. For fully a year patches of ecchymosis were frequently noticed under the skin, but were attributed to bruises, and in May last the extreme pallor attracted notice. Any scratch appeared to suppurate almost immediately; he became steadily paler and thinner, and duller and more languid. In August the mother noticed that the eyes were prominent, and that the veins on the eyelids were dilated. The exophthalmos increased, and he became gradually deaf. On admission a large number of petechial hæmorrhages were seen all over the body, except the face. There was marked puffiness of the eyelids, especially on left side. There was œdema and marked anæmia of the conjunctivæ. By October 15 the left eyeball had become so prominent that it could not be covered by the eyelid without an effort. The deafness increased. On examining the inside of the mouth, a hard swelling of a purplish colour was observed occupying the hard palate on both sides in its whole extent antero-posteriorly, and extending laterally from the teeth nearly to the median raphé.

By October 22nd a smooth, rounded swelling appeared in each temporal region, reaching behind to about half an inch in front of the pinna, and in front to the outer edge of the orbit. It felt as if fixed to the underlying bone, but it was unattached to the skin. The diagnosis of chloroma was made on this date. There was double optic neuritis. On November 9th a pale greenish-yellow tumour of a jelly-like consistence made its appearance at the right inner canthus, and gradually advanced over eyeball, covering its lower half. To a smaller extent left

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eye was covered by a similar tumour. He complained of severe pain in frontal region and in eyes. By November 15 the tumours completely covered both eyeballs, and exuded a sanguineous serum. The waxy pallor of face and engorgement of veins were very striking. Coffee-ground vomiting occurred several times, and the boy died of exhaustion on November 16.

At the necropsy the myocardium of the left ventricle showed marked fatty degeneration. The ribs were of a green colour in their whole extent. The kidneys were of a pinkish-green colour, and dotted over with distinct green spots under the capsule. On section bright green areas were found in the cortex, near the medulla. On reflecting the scalp, green tissue was found extending along all the sutures, particularly the interfrontal, the coronal, and lambdoidal, and extending from the latter to the mastoid process, and in thin, irregular patches over the bones of the skull. This green tissue was confined to the pericranium, and could be stripped completely off the bone. The diploë throughout was of a dirty greenish colour. All the bones in the anterior part of skull were infiltrated with dull green material. The tonsils were infiltrated with bright grass-green tumours.

Dr Dunlop had only succeeded in finding the records of twenty-four cases. He said the most characteristic changes were to be found in the osseous system, and that it was pretty generally admitted that the tumours originate from the periosteum of the head and face, and that the growths met with in other organs are of secondary formation. It was a striking fact that neither the brain nor the cranial nerves are affected though lying in closest proximity to the primary tumours.

The great majority of cases occurred before the age of 15 years, and boys were more liable than girls. As in this case, the blood in every case of chloroma is characterised by a very striking lymphocytosis, and by a remarkable diminution in the reds. Before the appearance of the tumours, therefore, a diagnosis from leukemia would be impossible.

The prognosis is invariably fatal from exhaustion, the average duration being five or six months.

Dr Byrom Bramwell read (1) a paper on "A case of Chloroma with numerous lymphatic deposits in the skin, and a remarkable infiltration of the conjunctivæ, gums, larynx, etc."; and (2) a paper on "A case of very acute Lymphatic Leukemia, in which lesions identical with those in case 1 were present in the gums, tonsils, larynx and skin" (see p. 219).

Mr Cathcart read a "Note on a method of securing the

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lingual artery in excision of the tongue through the mouth" (see p. 238).

The Society agreed to petition the Town Council to continue the notification of measles, and a committee consisting of Town Councillor Dr Matheson Cullen, Dr Harvey Littlejohn, and Dr Norman Walker was appointed to draft the petition.

Medico-Chirurgical Society

A SPECIAL meeting of the Society was held on February 19th in the Royal College of Physicians, for the purpose of discussing the treatment of incipient and transient mental disorders in the Royal Infirmary, the President of the Society (Professor T. R. Fraser) in the chair. Invitations to attend had been issued to a number of those interested in the subject. The discussion was opened by Sir John Sibbald, whose views will be found in the first article of this Journal.

The Master of Polwarth, Chairman of the Board of Lunacy, supported the proposal, on the ground that the Board should encourage anything that would be likely to conduce to the benefit of those suffering from mental diseases.

Sir John Batty Tuke recalled previous attempts to undertake the treatment of such cases in the Royal Infirmary, and suggested that every pressure should be put upon the Infirmary Managers to entertain the scheme.

Dr Affleck was sure that the scheme was a good one: when he was physician to the Royal Infirmary, he had occasionally treated such cases in his wards, with good results. He dwelt on the fact, that in the better classes a change of air, under charge of a competent nurse, was generally successful in such cases, whereas this was beyond the reach of the poor. He foresaw serious practicable difficulties, but believed they were not insuperable.

Dr Clouston thought that it would be an economical thing for the Parish Council to come to some arrangement with the Royal Infirmary to treat the incipient cases; it would probably save them a good deal of money.

He was not prepared to admit that the teaching was so unsatisfactory as some suggested, but it was obvious that the Royal Infirmary Wards would be a great improvement in this respect.

Dr A. Bruce supported the scheme, and said that the removal of the stigma of having been in an asylum was one of the strongest arguments in favour of it.

Dr Carswell gave particulars of Glasgow's attempt to deal

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with the matter, in connection with one of the poorhouse hospitals. Last year 212 patients were admitted, and of these 167 were discharged recovered, and only 28 were certified and removed to an asylum. He said that the Parish Council in Glasgow intended to establish an out-door department.

Dr George Wilson thought it was unnecessary to argue in favour of the scheme, but he hoped that if it was not feasible to set aside wards, that at least an out-patient department would be established, and that arrangements would be made whereby suitable cases could be treated in the ordinary wards, as Dr Affleck had been in the habit of doing. He only suggested this as a temporary expedient, and he further pointed out, that to deny suitable mental cases the treatment they required in the Medical Wards of the Infirmary was to confirm the existing prejudice in the minds of the public.

Dr Wilson was sure that the managers of the Royal Infirmary would look kindly on the proposal, but the burden lay equally upon the Parish Council; if, as he believed, the Parish Council was determined to do the best possible for the insane, it was bound to give this project every consideration.

Sir John Batty Tuke moved, the Master of Polwarth seconded, and it was carried unanimously, "That this meeting urges strongly on the managers of the Royal Infirmary to seriously consider the expediency of providing wards within, or in the immediate vicinity of the institution, for the treatment of incipient, transitory, and recent cases of insanity."

Professor Rankine mentioned that a committee of Infirmary managers had been appointed to discuss the matter. This committee had considered the question of situation, and it seemed to them that it would be impossible to have mental wards within the walls of the Infirmary.

Edinburgh Obstetrical Society

THE third ordinary meeting of the present session was held on the 8th January — the President, Dr James Ritchie, being in the chair.

Dr N. T. Brewis exhibited a large number of interesting pathological specimens. The most remarkable was a kidney weighing when removed 48 lbs. and measuring 48 inches in circumference from a patient who had suffered more or less from renal symptoms since 1872. The tumour was removed on account of the discomfort it produced as well as slight uræmic symptoms which were beginning to develop. A calculus was also exhibited from an emaciated neurotic female aged 26, who had complained

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of constant pain in the left side. The ureters were catheterised and showed healthy urine from the right kidney, while that from the left contained masses of epithelial cells from the pelvis of the kidney. The pathological report indicated cancer of the kidney, but on making a lumbar incision and palpating the kidney a calculus was found filling up the pelvis of the left kidney. This proved to be an oxalate of lime calculus which was removed and the patient soon made a perfect recovery.

Dr Berry Hart showed under the microscope specimens of actinomycosis of the ovary.

Dr Alfred Sandstein contributed a paper on "The movements of the pelvic bones during the operation of Symphysiotomy, and the true function of the section of the pubic symphysis." In his absence the paper was read by the Secretary, Dr J. Lamond Lackie. The following is a synopsis of the communication.

The movements of the innominate bones :—

1. Rotation on a vertical axis passing through the sacro-iliac joint—carries the pubes apart, and "unlocks" the sacrum from its socket in the innominate bones. It is the dangerous movement, increases those diameters lying more or less transversely, increases the true conjugate usually in a minor degree, sometimes depending on the shape of brim in a major degree, sometimes not at all, and may even lessen it.

Its real cause is the disproportion between the fœtal skull and the pelvic brim, but above all, the necessity for expansion of the interval between the innominate bones which forms the socket for the sacrum, and is narrower behind; in order that this narrower part may glide over the sacrum which is wider anteriorly; and so allow the second movement to occur, and to increase the true conjugate sufficiently to allow the fœtal skull to pass the brim.

2. Rotation on a transverse horizontal axis passing through both sacro-iliac joints, carries the pubes downwards, exists in the pelvis before division of the symphysis, is even then capable of increasing the true conjugate, but only to a certain extent as the wedge shape of the sacrum which is wider anteriorly will not allow the correspondingly wedge-shaped interval between the ossa innominata to glide over it, more than to a certain extent. It is much more evident after section of the pubic symphysis, and increases the true conjugate usually in a major degree, sometimes in a minor degree, sometimes is the only factor in its increase, and is associated with and increased by the third movement that occurs, viz. :—

3. Rotation of each innominate bone on its own long axis extending from the sacro-iliac joint horizontally forwards. This causes the ilia to become more erect or vertical, and the ischia

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and pubes to be carried more apart, while at the same time each pubis dips, just as the point of a hook does if it is similarly rotated on the long axis of its handle. Thus by the dipping of the pubis, it increases the second movement in its effect. It is caused by the downward direction of the parturient powers, and the upward direction of the opposition power, the attachment of the muscles and the ligaments to the iliac crests and upper margin of the pubes.

Thus the true significance of the division of the symphysis pubis in symphysiotomy comes to be not that it permits pubic separation, but pubic descent.

Briefly, the conclusions which the author arrives at were :—

1. Since 6 cm. of pubic separation is all that can be allowed to occur, or since each cm. of pubic separation increases the true conjugate by 1·67 mm., the utmost amount of increase of the true conjugate that we can strive for is 1 cm., or $\frac{2}{5}$ inch. The cases must consequently be strictly limited to those in which, by an addition of $\frac{2}{5}$ inch to the true conjugate, we can *with safety to the mother* deliver a *living* child by nature alone, or aided by version or forceps. Symphysiotomy should therefore never be performed unless there is a true conjugate of at least $2\frac{7}{8}$ inches.

2. The child must be living.

3. Walcher's position must be used and maintained as far as possible, together with support given to the sides of the pelvis.

4. It is necessary in some cases to counteract unequal movement on the two sides of the pelvis. In order to prevent this asymmetrical movement a departure from Walcher's position is necessary. Dr Sandstein found that in all cases, by flexing the thigh on the abdomen on the non-moving side, and using the bent-up knee of that leg as a lever and abducting it forcibly outwards and downwards, that side could always be made to take on its fair share of the movement and to move equally with the other side, the relative projection of the pubis into the brim was prevented, and the rupture of the ligaments on the other side avoided or delayed.

5. The knife used to sever the symphysis should be broad-bladed.

6. Division of the subpubic ligament should not be aimed at, although the symphysis must be completely divided. By retaining this ligament, or at least not dividing it by the knife, it offers some resistance to the pubic separation, and if untorn prevents the extension of the wound down into the vulva, just as the hem of a handkerchief prevents the linen from tearing.

7. The cartilage does not undergo ossification. It is important to localise the joint. If the joint is missed great delay

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occurs in cutting the bones, and the detached end of the pubic bone necroses, and a fistula is the result. The joint is not always in the middle line.

8. Looking at the number of deaths from sepsis, and to the frequency of localised sepsis, rigid asepsis is necessary. Many fatalities from sepsis occur in patients with a previous foul vaginal discharge, and consequently the presence of such discharge should be considered as a contra-indication to the operation.

Dr Berry Hart described a "Case of full-time intact extra-peritoneal gestation successfully removed after five years' retention." This case gave a very clear history of retained extra-uterine gestation, and the physical signs were those of an extra-peritoneal cyst reaching up to the umbilicus. On operation the cyst was opened and the bones (photographs of which were shown) were removed. They were in a very perfect state of preservation. Nothing additional was found except a thick grumous fluid. There was some flesh on one of the legs and on the scalp. The sac-opening was stitched to the abdominal wound, and the sac itself stuffed with iodoform gauze. The posterior peritoneum had been lifted up as Taylor has described.

Dr F. W. N. Haultain read a paper on the "Expulsion of a dermoid ovarian cyst *per vaginam* during labour." He noted the extreme rarity of such an occurrence. In the case which he described the patient was a iii-para who had been in labour for twenty-four hours, and the membranes had ruptured twelve hours previously. As a soft mass had been felt bulging through the posterior vaginal wall, an attempt at delivery by means of forceps had been made, with the result that the mass had protruded through the vulva. On examination by Dr Haultain, the mass was found in the vagina, but became detached on attempting to draw it down, and so it was removed. Forceps were at once applied and the woman delivered. The tumour was found to be an ovarian dermoid cyst which had been driven through the posterior vaginal wall. The rent in the vagina was packed with a strip of iodoform gauze about two inches wide and four feet in length, and an antiseptic douche was given. The patient made an uninterrupted recovery. After referring to the literature of the subject, he passed to a consideration of the management of labour if obstructed by similar impacted pelvic tumours. Fortunately the complication was rare, and might be said to occur only once in 4000 cases, but if labour were left to the spontaneous efforts of nature, a mortality of 50 per cent. occurred. The recognised modes of management might be summarised as follows:—

1. Postural reposition of tumour into abdomen.

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2. Artificial delivery *per vias naturales.*
   (*a*) Without diminishing size of tumour.
   (*b*) After diminishing size of tumour.
3. Cæsarean section and ovariotomy.
4. Vaginal ovariotomy.

Dr M'Kerron, in his work on "The Obstruction of Labour by Ovarian Tumours," has given the following data:—

Reposition cases 41, with 5 deaths (12 per cent.); artificial delivery alone, 49 cases, with 24 deaths (49 per cent.); artificial delivery after disintegration of tumour, 33 cases, with 4 deaths (12 per cent.); Cæsarean section, 10 cases, with 8 deaths (80 per cent.); vaginal ovariotomy, 3 cases, with no deaths. One fact is clear, that the mortality due to forcible dragging of the child past the obstruction should abolish the operation. The results obtained by reposition and simple disintegration offer almost equal successes (12 per cent.), a death-rate surely far beyond what may be reasonably expected from the operative methods now at our disposal. The causes of death in both of these methods is generally peritonitis set up by the injury to the tumour. It would thus seem that the early removal of the tumour should be the treatment aimed at. This result may best be attained by (1) vaginal ovariotomy before delivery; (2) ovariotomy as soon as possible after delivery, either after reposition or disintegration of the growth before expulsion of the child. The former procedure might be readily carried out by the practitioner. Abdominal ovariotomy within twenty-four hours of delivery does not seem to be more dangerous than at any other time, and would furnish a mode of treatment with a mortality of less than 5 per cent. Besides, it merely anticipates the necessary operation by a few weeks, and removes the immediate risks of a possibly injured tumour. The removal of the growth may appear somewhat heroic advice, but it was justified, in Dr Haultain's opinion, by the high mortality which obtains under the present modes of treatment by simple reposition and disintegration. In the discussion which followed, Professor A. R. Simpson, Dr M'Kerron, Dr J. W. Ballantyne, and the President took part.

THE fourth ordinary meeting of this Society was held on the 12th February—the President, Dr James Ritchie, in the chair.

The specimens shown included:—(1) a large fibroid tumour removed by supra-vaginal hysterectomy, where there was some difficulty in diagnosis; (2) a specimen of transverse rupture of the fundus uteri in a full-time pregnancy in a woman not in labour; both shown by Dr Berry Hart.

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Dr F. W. N. Haultain exhibited :—(1) A fibroid uterus with carcinoma of the body removed by the abdominal route, with microscopic section. The glands in the abdomen were found to be greatly infected, but the operation was carried out as a palliative, though not as a remedial measure. (2) A uterus with adeno-carcinoma of the body removed by the vaginal route, with microscopic specimen. The specimen was from an unmarried woman aged 42, who had suffered from menorrhagia for five years. Two years antecedent to the operation Dr Haultain had curetted her, and the scrapings at that time were of very doubtful character, but the diagnosis did not then warrant the removal of the uterus. This case illustrated the slow rate of growth of an adeno-carcinoma, while the first illustrated a rapid growth. (3) Ectopic gestation sacs at the third and fourth months respectively, removed from the same patient at different times within a year. Dr Haultain noted the relative frequency with which such double cases occurred, and stated that he had twice met with a similar condition in ten cases he had operated upon. (4) Uterus with a large calcified fibro-myoma removed from a woman aged 67. (5) Microscopic slide and photo-micrographs from a case of primary tuberculosis of the cervix.

Dr J. W. Ballantyne demonstrated :—(1) a cephalometer for ante-natal mensuration; (2) fœtus with exomphalos and adhesion of hand to chest wall.

Dr R. C. Buist, of Dundee, read a paper on "Symphysiotomy in Practice." He narrated the histories of four patients on whom he had performed the operation on account of difficult labour. The ages of these patients varied from 20 to 25 years. On one patient (diagonal conjugate 9 cm.) who had previously had three futile confinements, Dr Buist performed a permanent operation to enlarge her pelvis (Frank's method), and subsequently she had an easy labour with large twins. One rickety patient (diagonal conjugate 10 cm.) had the operation performed during her first and third confinements after forceps had failed, her second confinement was spontaneous. One patient, with a diagonal conjugate of 8 cm., had her first and second labours at seven months. Her third child was delivered by symphysiotomy after forceps had failed. A fourth patient, with a diagonal conjugate of 8·5 cm., had had three previous difficult labours, and one child was alive with a permanently dinted head. Symphysiotomy was performed here also after forceps had failed.

Thus four children were born alive, and the fifth died during delivery as a result of delay. Two patients had femoral thrombosis subsequent to the operation; one suffered from incontinence of urine, due to an accident after the operation,

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but this was subsequently cured. None of the patients suffered from any impairment of gait, and all were able to do their house work within six weeks of the operation, and two resumed work at a jute mill within three months. Ayre's subcutaneous method was adopted in the last four operations, as the after-treatment is simpler than after the open treatment.

The communication was discussed by the President, Drs Berry Hart, Jardine, and Munro Kerr of Glasgow; and Dr Buist replied.

The Secretary, Dr Fordyce, read a paper entitled "Some Remarks on Diagnostic Help in Gynæcology," by Professor Fehling, Strassburg, Honorary Fellow. He stated that the general success attending gynæcological operations had led many, especially younger, gynæcologists to attach no great value to thorough diagnosis. For them, the discovery of a tumour near the uterus, along with the patient's complaints, suffice to decide them on a laparotomy. This mode of procedure often involves no injury, but cases do occur where, after the diagnosis is made, we find that the operation has actually been injurious to the patient. The clinical professor, in the interests of instruction, should always avail himself of every diagnostic resource, in order to obtain before the operation the most reliable diagnosis. In spite of our resorting to every possible and reasonable expedient, extraordinary cases occur when the diagnosis is not perfectly clear, and as an extreme measure recourse is had to diagnostic laparotomy or diagnostic puncture. Exploratory incision can be made in many different ways. Many operators make a small incision sufficient for the introduction of two fingers. In difficult cases this does not throw much light on the subject. Where a practical result is to be derived from probatory laparotomy, a sufficiently long incision of the abdominal wall has to be made, so that the groping hand, along with the controlling eye, may closely observe the existing conditions. On the other hand, it does not lie within the range of the probatory incision to loosen adhesions, to dislocate or remove the tumour, or make a puncture in it, before one has finally decided that the operation can actually be performed. This exploratory incision is only allowable in the case of large tumours, where the size of the tumour or concomitant ascites have rendered accurate diagnosis impossible. If the operation is seen to be impossible, the abdominal cavity has to be at once closed. When, however, a beginning has been made by loosening adhesions, the operation has to be completed, as there is nothing more dangerous than a half-finished operation. The results of abdominal exploratory incision are very poor. Many patients die after a simple probatory incision, when, on

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account of large malignant tumours of the ovaries, omentum, or bowels, the operation has to be abandoned. In cases of ascites, with carcinoma, the increase in the ascites takes place very swiftly, so that the healing of the abdominal wound is often delayed. Notwithstanding the most careful antiseptic precautions, Professor Fehling has frequently seen peritonitis or sepsis following such exploratory incision. He is inclined to limit this proceeding to a few cases. Still less frequently ought incision from the anterior or posterior pouch of Douglas, for the mere sake of examination, be undertaken.

At present the *probatory puncture* plays a far more important part than the incision. Formerly it was a most important therapeutic procedure, as, for example, in conjunction with injection of iodine in the case of ovarian cysts. It is a mistake to attach too little value to probatory puncture. In the case of large tumours which have grown up into the great pelvis, puncture can generally be dispensed with. An abdominal puncture is accompanied by greater risk than the small advantage gained from it warrants. But Professor Fehling could not go so far as Thornton does, in stating that it is criminal, yet he would advise that it be replaced by abdominal exploratory incision.

Probatory puncture from the vagina is a different matter, however, especially in the case of smaller tumours of the adnexa or in the case of exudation and accumulation of fluid in the pouch of Douglas and the parametrium. Cases occur where there is uncertainty as to whether the fluctuation is real or false. By tapping the fluid, it is possible in some cases to discover the nature of the tumour, whether ovarian or tubal. Most important, however, is it to discover whether the accumulation is serum, blood, or pus, as it often determines the mode of operation to be selected,—whether vaginal or abdominal,—and it can be carried out without risk. Of course it is necessary that the tumour to be punctured actually adjoins the vagina; that the locality where the puncture is to be made, as well as the instrument, be perfectly aseptic. Professor Fehling has made eighty-one such punctures, invariably with good success. In five cases only did any disturbance follow the puncture. The fluid withdrawn should be at once examined microscopically and bacteriologically.

The results of his experience have shown that vaginal puncture in the case of small tumours, especially those of the adnexa, is a harmless procedure, and useful for purposes of diagnosis as well as for therapeutics. It certainly merits a more extensive application. The probatory incision through the posterior vaginal wall is to be adopted accordingly as a

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result of the vaginal puncture, and probatory laparotomy should be avoided as far as possible.

The communication gave rise to a good deal of discussion, and the following gentlemen spoke:—Drs R. C. Buist, F. W. N. Haultain, and Haig Ferguson.

Glasgow Medico-Chirurgical Society

THE Society met on Friday, January 17, 1902, under the presidency of Dr W. G. Dun. Dr J. H. Nicoll showed two cases of lumbar spina bifida treated as out-patients after excision. The first was a child of two months, and the sac was a pure meningocele. The child was treated at home after operation and did well. The second patient was younger, only three weeks of age. The sac showed dimpling and the operation showed it to be not a pure meningocele, but a sac containing nerve-cords with little bodies which microscopic examination showed subsequently to be false neuromata, small fibrous nodules. The recovery was uneventful. Before operation there was some paraplegia, which has distinctly improved since the surgical treatment. Dr Nicoll stated that of the last eight cases he had had, and had operated on, seven had recovered and were well, and the eighth died of carbolic acid absorption from the wound.

Dr W. R. Jack exhibited a case of congenital stenosis of the pulmonary valve in a girl 19 years of age. She complains of palpitation and shortness of breath which have lasted all her life, but have become more severe of late. She tends to become much cyanosed on exertion. There is no dropsy. Menstruation is irregular. In appearance the patient shows distinct cyanosis of face, hands and feet, with clubbing of the digits and curving of the nails. Auscultation shows a marked systolic bruit, loudest over the pulmonary valve and heard also at the tricuspid area. The right ventricle is dilated. Dr Jack remarked upon the infrequency with which these patients lived beyond puberty.

Dr Lindsay Steven said he agreed with the diagnosis, but added that he thought it likely that a communication existed between the ventricles.

Dr Wallace Anderson and the President also spoke and Dr Jack replied.

Dr Alfred Young showed a case in which choledochotomy was performed, and a solitary gall-stone revealed. The patient was emaciated before operation and showed slight jaundice. She had had attacks of pain for eight years. Latterly she had had

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occasional attacks of shivering and sickness. She was admitted to the Western Infirmary in July 1901. Dr Young operated, making Kocher's incision. Many adhesions surrounded the thickened and hour-glass-like gall-bladder. In the common bile-duct, near the duodenum, lay a solitary gall-stone, the size of a hazel-nut, which was removed by incising the duct. The gall-bladder was stitched to the abdominal wall, discharged bile for three weeks, and then closed. The patient is now very well.

Also a case of empyema of the gall-bladder treated by operation. The woman was about 50 years of age, and had a similar history. Bad attacks of pain with shivering and vomiting occurred about four times a year. She was admitted to the Western Infirmary in September 1901, developed a temperature, and showed a bulging fluctuating swelling, deep seated and situated in the right hypochondrium. In operating, an incision was made along the right linea transversalis, and pus was quickly reached. The pus had a peculiar velvety feeling, and coagulated quickly. The cavity lay just below the liver. It was drained from an opening made posteriorly and healed completely in four weeks. The patient has had no symptoms since leaving hospital nearly three months ago.

Dr Walker Downie gave a further report on a case of sarcoma of the tonsil enucleated two and a half years ago. The patient was Mrs K., aged sixty-one, was operated on in 1899. The symptoms were swelling of the tonsil, pain shooting to the ear, and hoarseness. The removed mass was a spindle-celled sarcoma. By October 1901, a hard mass was found behind the angle of the right upper jaw: a small hard nodular mass projects into the mouth. There was some pain. There is little doubt that recurrence has taken place here, but operation is obviously out of the question.

Drs J. W. Allan and Hugh M'Laren showed specimens from a case of malignant disease of œsophagus complicated with aneurism of the aorta, malignant cyst of the stomach, and septic pneumonia. The patient was a man, aged fifty-eight, and was admitted to the Royal Infirmary, July 1901, with dysphagia, cough, and some dyspnœa. The X-ray examination showed the presence of a tumour with lateral pulsation. After being in hospital some time, the temperature rose and consolidation was found in the right lung, in the lower lobe, with signs of a cavity in the upper part. He died in October 1901. *Post-mortem*, an aneurism was found in the transverse part of the arch of the aorta; an epithelioma about the middle of the gullet, circular in form; and a malignant cyst in the walls of the stomach, with a septic pneumonia originating from the gullet.

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THE eleventh ordinary meeting of the Society was held on February 7th, Dr W. G. Dun in the chair.

Dr Nicoll showed a patient suffering from frost-bite. It came on, on January 30th, an extremely cold day. Bullæ developed on the following day.

Dr T. Kennedy Dalziel described a case where there had been hæmorrhage from a gastric ulcer, and in which he successfully excised the bleeding ulcer. The ulcer was exhibited, and the aperture of the spouting artery. The subject was a woman, aged thirty-four, with a three years' history of stomach disorder. On January 13, she vomited a large amount of blood, and again on January 14 and 15. She then had two convulsive seizures, with great pallor, feeble pulse and delirium. The stomach was exposed, and then opened. It contained much blood, fresh and old. An ulcer was found on the lesser curvature ¾ in. by ½ in. In its base lay an artery, bleeding. It was excised, the peritoneal coat not being disturbed. It was closed by a circular continuous suture. The patient stood the operation well. Recovery was interrupted by the formation of thrombi in some of the large veins. Dr Dalziel said it was certain, in his opinion, that death would have occurred if the operation had not been speedily performed.

He next exhibited a young man who had suffered from an ulcer in the sphincter of the pylorus which had perforated. The patient was seventeen, and had had little gastric disorder. Occasionally two hours after eating he had some pain and felt hungry, whereupon he ate something more and the pain ceased. On December 17, 1901, more pain came on, with local tenderness most marked over the appendix. Pulse was 120, temperature 101°. No history could be got. An exploratory incision showed a healthy appendix. A mesial opening was next made and stomach contents found oozing. Search revealed a perforated ulcer of chronic nature at the pylorus. The edges were so leathery that they could not be inverted. It was therefore excised by an elliptical incision, and this so closed that the pylorus was somewhat widened. In fact a pyloro-plasty was done. Recovery was uneventful.

He also reported a case of gangrene of the gall-bladder. The patient was a domestic servant, aged twenty-two years. She was seized with pain and vomiting and constipation, and the abdomen was distended. Jaundice was absent. Laparotomy showed a distended gangrenous gall-bladder, filled with stones. The bladder was removed, and the parts stuffed and drained.

Dr W. F. Gibb exhibited a young man, aged twenty years, who, on August 2, 1901, fell and struck his forehead on a cask. Next day he had violent general epileptiform convulsions, the

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head being turned to the left, and the eyes up and to the left. This continued till August 12. He lost consciousness during each attack. There was no aura. He was admitted to Paisley Infirmary, and on August 14 had seventy fits. He was trephined on August 15, over the motor area for the face. Nothing abnormal was found. One drachm of cerebro-spinal fluid escaped. The disc of bone was not replaced. Recovery was good, and the fits completely ceased.

Dr Laurie (Greenock) reported two cases of acute traumatic gangrene, associated with simple fracture. The first patient had a fracture of the upper end of the tibia; the leg was cold below, and signs of moist gangrene set in. The popliteal artery was torn through. Amputation was performed, and a good recovery ensued.

In the second case, the femur was fractured and the thigh was much bruised. Next day the leg was cold and pulseless. Six days later amputation was performed, as signs of moist gangrene had supervened.

Dr Beath Henderson described a case of morphinism in a man, which had lasted twelve years, the amount taken being about three grs. of morphia hypodermically per diem. He cured himself by substituting oral administration and gradually tapering off the dose.

Glasgow Obstetrical and Gynæcological Society

THERE was a large turnout of the Fellows on January 22, 1902, to hear the Honorary President, Dr W. T. Smyly, of Dublin, deliver an address. The subject chosen was the "Treatment of Endometritis," which the speaker dealt with in a lucid and comprehensive manner. At the conclusion of the address a vote of thanks to Dr Smyly was moved by Dr W. L. Reid and cordially given. Thereafter (at 8 P.M.) the Fellows adjourned to the Windsor Hotel where dinner was served. Dr Jardine occupied the chair, and the guests comprised the Honorary President, the President of the Faculty of Physicians and Surgeons (Dr Jas. Finlayson), Dr Milne Murray (representing the Obstetrical Society of Edinburgh) and Professor Stockman. After the loyal toasts had been duly honoured, the President proposed the health of the Honorary President; the "Glasgow Medical School" was entrusted to Dr Sam. Sloan, and Dr Finlayson replied; while Dr A. W. Russell called upon the Fellows to honour the sister society in Edinburgh, in returning thanks for which Dr Milne Murray made a felicitous speech.

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THE fifth ordinary meeting was held on February 12, 1902, under the presidency of Dr Samuel Sloan.

The discussion of the "Treatment of Uterine Fibromyomata," adjourned from December 18, 1901, was continued. Prof. Murdoch Cameron said that the first point in treatment was the diagnosis. Referring to a paper by Alban Doran in the *Transactions of the Obstetrical Society of London* (1893), he said that a number of cases of fibroid tumour had been reported in which cure was said to have occurred spontaneously by disappearance of the tumour before the menopause. He (the speaker) did not believe in spontaneous disappearance under expectant treatment. The cases generally turned out to be inflammatory. He reviewed the methods of surgical treatment for the past sixty years. In many cases a tumour existed where no treatment was indicated. If the patient had young children she ought not to be subjected to the risk of a major operation until other means had been exhausted. In subserous pedunculated growths the removal was easy. In interstitial tumour, if operation must be done, hysterectomy was best, abdominal for large, and vaginal for small growths. Enucleation he did not favour. In many submucous fibroids the os is easily dilated, in others the case may need the cervix divided. An important complication was fibroid tumour with pregnancy. The growths often diminish rapidly in size after delivery. If the patient live far from town induction of labour should be done perhaps, and later on the tumour removed.

Dr Nigel Stark referred to the importance of correct diagnosis, especially with reference to pregnancy and inflammatory condition. He did not think that steady growth merely was an indication for removal. In removal he preferred supra-vaginal amputation, and the abdominal route in order that one might get a good view. Morcellement he did not consider safe.

Dr Carstairs Douglas said that at one time he had had a pretty extensive experience of Apostoli's method, and although improvement of a symptomatic character resulted, he thought it was just temporary. He had known of no case cured by it.

Dr Edgar replied, summing up the chief points which had been considered.

Glasgow Southern Medical Society

THE ninth ordinary meeting was held at the Victoria Infirmary on January 23, 1902. The evening was completely and profitably filled up by a demonstration by Mr Parry of a

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large group of surgical cases of great interest. Among those that attracted special attention may be mentioned a patient where numerous tubercular glands were removed from the anterior and posterior triangles of the neck by means of an incision in the hairy scalp. There was, of course, no scar visible. Another case of interest was that of a woman, long the subject of chronic constipation, who presented an idiopathic dilatation of the colon, and in which Mr Parry joined the ileum to the rectum.

THE tenth ordinary meeting took place on February 7, when Dr J. K. Kelly introduced a discussion on the "Treatment of the Third Stage of Labour." He pointed out that two processes made up this stage—(1) separation of the placenta, and (2) its expulsion. The former he considered due to contraction of the uterus, and not to retraction, and criticised Hart's views adversely. Dr Kelly described Crédé's method in that obstetrician's own words, and pointed out that it was designed expressly to aid expulsion after separation of the afterbirth had occurred.

Dr Munro Kerr said the essential point in the management of this part of labour was to give time for full separation to occur. Thirty minutes was not too long. He pointed out that one could often tell if the placenta was separated by the bulging of the lower uterine segment and diminution in bulk of the upper part of the uterine tumour. He thought both retraction and contraction played a part in the separation of the placenta.

Dr E. A. Gibson said that rapid, forcible expulsion tended to lead to post-partum hæmorrhage, and there was a risk of the membranes being retained. The proper thing was to wait till separation took place, guarding the uterus meanwhile by the hand, and then to gently squeeze the placenta out. Ergot he considered inadvisable in the third stage of labour.

Dr Robert Jardine stated that it was quite easy to forcibly eject a placenta in five minutes, but it came out minus the membranes. He thought the uterus should simply be watched and time given, but if after thirty minutes the placenta had not separated, it was adherent more or less, and the hand should be introduced.

Drs Miller, Hamilton, Peden, Robertson and others also spoke.

Glasgow Eastern Medical Society

THE above Society met on July 15, Dr Couper in the Chair. Dr Robert Jardine read a paper on "Heart Disease in

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Pregnancy." After referring to the serious character of this complication, he said there was a lack of proper teaching regarding this matter even in good modern works on Obstetrics. He gave details of 13 typical cases, in hospital and private practice, with one death. The cases included mitral stenosis, mitral regurgitation, combined mitral lesion, aortic stenosis and aortic incompetency. He considered mitral stenosis to be the most serious and aortic incompetency to stand next. He always followed Hart's teaching and allowed some bleeding to take place in the third stage. The second stage should never be allowed to last long; ergot should be avoided where possible; and cardiac stimulants, especially digitalis and strychnine, freely employed. As long as compensation was good it was remarkable what these patients could come through. A discussion followed, in which most of the speakers agreed that the gravity of this complication was usually over-estimated by obstetrical writers; and Dr Jardine replied.

New Books and New Editions

Anatomical Atlas of Obstetrics, with Special Reference to Diagnosis and Treatment. By Dr OSKAR SCHAEFFER, Privatdocent in Obstetrics and Gynecology in the University of Heidelberg. Authorised translation from the second revised German edition. Edited by J. CLIFTON EDGAR, A.M., M.D., Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College. Pp. 315, with 122 figures on 56 lithographic plates, and 38 other illustrations. London and Philadelphia: W. B. Saunders & Co. 1901. Price 13s. net.

A FORMER English version of this work was reviewed in this *Journal* (Vol. II., p. 269, 1898); but the present issue is greatly enlarged and improved, and in many respects different. The coloured plates are very good, and they are present in profusion; and each plate is fully described, and not merely referred to in the text. The text itself is good, and sufficiently full for the purposes of the work, viz., to be an atlas. To the English reader there are some statements which differ from what, no doubt, he has been taught: for instance, "abortion" is the name given to the expulsion of the ovum before the fourth month, and "premature labour" is applied to all the cases after that period. The best anæsthetic in labour is said to be a mixture of laughing gas and oxygen in the proportion of one to four. Nevertheless the "Atlas" is likely to prove of much assistance to the obstetrician or medical student, and especially to the

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student who is at the same time reading a not too elaborately illustrated text-book of midwifery.

Éléments d'Anatomie Gynécologique. Par le Dr PAUL PETIT, lauréat de l'Académie de Médicine de Paris, etc. Préface par PIERRE SÉBILEAU, Professeur Agrégé d'Anatomie à la Faculté de Médicine de Paris. 8vo, pp. 207, with 32 original plates. Paris: Georges Carre et C. Naud. Price 16 fr.

THIS is the result of three years' careful and persistent work by a capable man. He discusses systematically the anatomy of the whole region interested in gynecological operations in the four sections—perineal region, pelvic region, abdominal wall and iliac fossa. In each he gives a full and systematic analytical discussion of the tissues and structures involved, then a synthetic view, and then in the light of the results arrived at discusses the more pertinent clinical and surgical problems. The relations of Bartholinian cyst and abscess, extirpation of the vulva, rupture of the perineum, pelvic cellulitis, ovaro-salpingectomi, hysterectomy, atrophying ligature, and the statics of the pelvis find in succession interesting and suggestive comment. The plates are very clear. The volume would repay study, especially alongside the cadaver.

List of Books Received

From Messrs W. B. Saunders & Co., London.

A Text-Book of Pharmacology and Some Allied Sciences. By Torald Stollmann. Price 16s.

Atlas and Principles of Bacteriology. By Prof. K. B. Lehmann and R. O. Newmann. Price 21s.

A Laboratory Hand-Book of Urine Analysis and Physiological Chemistry. By Charles G. L. Wolf. Price 5s.

Human Physiology. By Joseph Howard Raymond. Second Edition. Price 15s.

A Manual of Practice of Medicine. By G. Roe Lockwood. Second Edition. Price 15s.

Typhoid Fever and Typhus Fever. By H. Curschmann. Edited by William Osler. Authorised Translation from the German.

A Text-Book of Pathology. By Ludvig Hektoen and David Riesman. Two vols. Price 35s.

From H. K. Lewis, London.

A Text-Book of Medicine. By Adolf Strümpell. Third American Edition. Translated by H. F. Vickery. Price 42s.

Rough Notes on Remedies. By William Murray. Fourth Edition. Price 5s. 6d.

Hand-Book of Bacteriological Diagnosis for Practitioners. By W. d'Este Emery. Price 5s. 6d.

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From Longmans, Green & Co., London.

Directions for Class Work in Practical Physiology. By E. A. Schäfer. Price 3s.

Quain's Dictionary of Medicine. Edited by M. Murray. Third Edition. Price 21s.

From Messrs J. B. Lippincott & Co., London.

Pediatrics. Rosch. 8vo. Illustrated. New Edition.

Problems Relating to Surgical Operations. By G. W. Crile. Price 12s. 6d.

From Wright & Co., Bristol.

Elementary Bandaging and Surgical Dressing. By the late W. Pye. Revised by T. Carwardine. Ninth Edition. Price 2s. 6d.

First Aid to the Injured. By Warwick and Tunstall. Second Edition. Price 2s. 6d.

From Rebman, Ltd., London.

Medical Treatment of Gall-Stones. By J. H. Keay. Price 3s.

System of Physiologic Therapeutics. By F. Parke Weber. Vol. iv., Bk. ii. Price 10s. 6d.

From Macmillan & Co., London.

On Disorders of Assimilation and Digestion, &c. By Sir Lauder Brunton. Price 10s. 6d.

From J. & A. Churchill, London.

Elementary Ophthalmic Optics. By J. H. Parsons. Price 6s. 6d.

A Short Manual for Monthly Nurses. By C. T. Cullingworth. Price 1s. 6d.

Nursing: General, Medical, and Surgical. By F. W. Hadley. Price 3s. 6d.

Short Practice of Midwifery for Nurses. By Henry Jellett. Price 6s.

From Smith, Elder & Co., London.

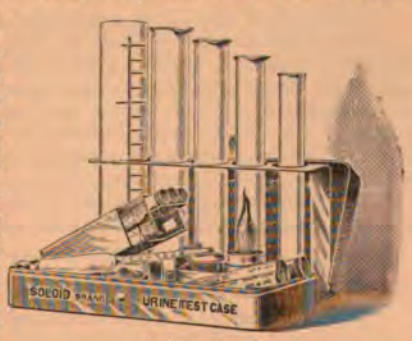
Lectures on Chemical Pathology. By C. A. Herter. Price 7s. 6d.

From W. Green & Sons, Edinburgh.

Accessory Sinuses of the Nose. By A. Logan Turner.

Notes on Foods, Drugs, etc.

We have received from **Messrs Burroughs & Wellcome** a specimen of their "Soloid" Urine Test Case. This is a neat plated case of a size suited for the greatcoat pocket, and contains, besides a spirit-lamp, test-tubes and rack, test papers, tubes of soloids for testing for albumin and sugar, a dainty little urinometer and tube, an Esbach's tube, and a card of directions for performing both qualitative and quantitative tests with the materials supplied. The fittings are exquisitely neat, the reagents do what they are intended to do, and the case should be very useful for bedside urine-testing to both practitioner and consultant. The annexed cut shows the arrangement of the case.



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The same firm keeps the list of its well-known Tabloids always up to date. Among those which have reached us since we last referred to them are Tabloids of Aspirin, an excellent substitute for Salicylate of Soda, Urotropine, Quinine Belladonna and Camphor, and a combination of Iodide of Potassium and Perchloride of Mercury, which is a very handy form of taking those drugs. We would recommend that these last Tabloids be dissolved before they are taken, as we have once or twice seen them cause irritation when swallowed in Tabloid form. Cacodylic Acid has been strongly recommended in France as a substitute for the ordinary preparations of Arsenic, and B., W. & Co. supply Tabloids containing one-fourth of a grain of the Cacodylate of Sodium. One advantage claimed for the preparation is that large doses may be taken without any disturbing symptoms.

They have also sent us some very neat Ophthalmic Tabloids of Atropin, and quite recently similar Tabloids, consisting of $\frac{1}{250}$ of a grain of Alum.

Neave's Food.—Neave's Food is one which has stood the test of experience. As a starchy food it is not suitable for all cases, but it is rich in Phosphates, is pleasant to take, and has a slightly aperient action. It is especially useful for children past the earliest infancy.

Symington's Egyptian Food is composed of flour of the Egyptian Lentil. Some years ago we remember that Lentils were boomed as *the* food for the poor. The taste is pleasant, and it is an easily digested food, useful in certain dyspepsias, and from the amount of Iron it contains, in anæmia and chlorosis.

Messrs Evans, Sons & Co., Liverpool, have sent us some of their specialities, which are prepared according to the processes of M.E.C.C., Stanford. The first, **Thyroglandin**, is an extract of the thyroid gland of the sheep, which contains all the active principles. It is four times the strength of the fresh gland, and the dose is therefore a small one. We have tried the preparation, and have found it active, and in all respects satisfactory.

The second, **Alginoid Iron** (*Ferri alginas*), is a brown, tasteless powder, the special advantage of which is that it passes unchanged through the stomach, and is only soluble in the juices of the intestine. It is therefore recommended by the manufacturers as likely to be useful in cases of chlorosis where the stomach is disturbed. We have tried the preparation in such cases, and have found it better borne than the ordinary iron preparations, and even than such forms as the peptonate and lactate, while the blood conditions improved rapidly under its use.

"Whisky's a bad thing, especially bad whisky," said the Highlander, and those who disapprove most strongly of Meat Wines must admit that if they are to be, it is better that they should be good. The **Armstrong Beef and Malt Wine**, of which samples have been submitted to us for report, is composed of a good, sound, not too heavy Port, Lemco (the registered name of one of Liebigs' Extracts of Meat), and the D.C.L. Extract of Malt. It is quite pleasant to take, and yet has the distinct medicinal flavour, which is desirable in such preparations.

We can recommend it for use in suitable cases, and it will be found more useful in the traveller's flask than the usual whisky and water.

All Communications—including **BOOKS** *for* **REVIEW** *and* **EXCHANGE JOURNALS**—*are to be addressed to* THE EDITORS, 7 *Manor Place, Edinburgh.*

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THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

ON THE VALUE OF ABDOMINAL SECTION [1]

By J. CRAWFORD RENTON, M.D.,
Surgeon and Lecturer on Clinical Surgery, Western Infirmary, Glasgow;
formerly Examiner in Surgery and Clinical Surgery
in the University of Edinburgh

IT is now an accepted fact that with careful precautions the abdomen may be opened and the contents examined with safety in the great bulk of cases requiring such an operation. Still this feeling of safety must not lead us to regard abdominal section as a trivial operation because the very fact of regarding it as trivial and a too great confidence in its general success may lead to distressing failures. Let us therefore take every precaution in each case, however simple, and should anything untoward happen we will have the feeling of having done our best to avoid a catastrophe. My desire is to put before you shortly and practically the principal conditions requiring abdominal section.

Commencing with the peritoneum itself nothing is more startling at present than the extraordinary effect produced by opening the abdomen in cases of acute, sub-acute, and chronic tubercular peritonitis, either with or without ascitic fluid. You can all remember cases of typical tubercular peritonitis which have resisted every remedy, and while you can also remember a certain number of patients suffering from tabes mesenterica who by dint of excellent surroundings and suitable treatment have battled through the serious complaint without operation, you will agree with me that in former days we were rather

[1] Read at a Meeting of the Stirling, Kinross and Clackmannan Branch of the British Medical Association.

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hopeless of cases of tubercular peritonitis. A certain number are accompanied with ascitic fluid along with hard masses in the abdomen, and these, after draining away of the fluid by an ordinary trocar and cannula, sometimes recovered; still they very frequently drifted into a condition of hopeless weakness, and it was only when the abdomen was freely opened, the fluid evacuated, and the interior of the cavity washed out with saline solution or a weak lotion of corrosive sublimate, that not only did the fluid not reappear but the masses were entirely absorbed. When the fluid is excessive a glass drainage tube ought to be retained for three days. In all cases of tubercular peritonitis, whether acute or chronic, whether accompanied by fluid or not, we now recommend opening the abdomen, and when this is done early enough the results are most satisfactory.

In the acute form with an evening temperature of 103° and 104° the temperature at once falls after the operation and the hard masses which are found studded over the peritoneum and omentum in sizes varying from a small pea to a cocoanut rapidly disappear. Sometimes the peritoneum and the omentum and mesenteric glands are all involved in one solid mass and yet the opening of the abdomen and slightly separating these adhesions is sufficient in many cases to effect a cure—why it does so has not yet been explained. Where there is no fluid it is not necessary to insert a drainage tube, but a piece of iodoform gauze is generally left in the abdomen for forty-eight hours. It is unnecessary to make a large opening, as one sufficient to admit two fingers is quite enough. A pint of saline solution is poured into the abdomen, allowed to partially drain out, and the wound closed.

In some cases small masses of tubercular deposit of a very chronic kind give rise to a good deal of pain as the following case illustrates:—

A. B. had suffered for four years from recurrent attacks of pain in the epigastrium and at one point a tiny nodule was detected by Prof. Stockman, along with whom I saw the patient. On opening the abdomen a hard nodule the size of half a walnut was removed from the surface of the stomach, and two other nodules from the mesentery of the small intestine. The patient has since been quite free of pain. The case was of considerable interest to me, as I had seen her two years previously in con-

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sultation with Dr Stewart of Carluke and could find nothing of a local nature to account for the pain.

It is now well known that inflammatory enlargements where symptoms of obstruction have occurred on several occasions have entirely disappeared after opening the abdomen. Several of these cases I have recorded and had the pleasure of showing one of them at a joint meeting of this Branch along with the Glasgow Branch some years ago.

One specially interesting case, sent to me by Dr M'Niven, was suffering from a large tumour, apparently involving the stomach and colon, and giving rise to symptoms of obstruction. After the abdomen was opened the tumour entirely disappeared, and the patient has had no recurrence of the obstructive symptoms for three years.

As regards the stomach, the three conditions which most frequently call for surgical interference, and which are invariably accompanied by pain, are :—

1. Dilatation of the stomach due to pyloric obstruction, either of a simple or malignant nature.
2. Hæmorrhage from a gastric ulcer.
3. Rupture of a gastric ulcer.

First.—In dilatation of the stomach due to chronic dyspepsia, simple pyloric obstruction caused by the cicatricial contraction of an old ulcer or a fibrous pyloric tumour or malignant constriction, gastro-enterostomy is the operation which is the most satisfactory in relieving all the distressing symptoms. It is unnecessary in an audience like this to go into the details of the operation, but suffice it to say that most surgeons are satisfied that connecting the jejunum to the posterior part of the stomach is more satisfactory than joining it to the anterior wall. The operation is exceedingly safe in simple cases, and very easy of performance, but in malignant cases the mortality is necessarily much higher, and the relief is not of very long duration.

Second.—In gastric hæmorrhage, as you all know, cases generally do well under medical treatment, but exceptional cases occur where it is essential to perform gastro-enterostomy.

Third.—Rupture of gastric ulcer. The symptoms are now so well known, and the importance of early operation so thoroughly recognised, that a considerable number of cases

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have now been operated on, and although the mortality is still high, a fair number of recoveries take place. With symptoms of rupture distinctly present there should be prompt operation, as every hour of delay is serious, even although the patient has rallied from the first shock of the rupture, and may herself feel so well, that it is with difficulty permission to operate may be obtained. The following case illustrates the importance of this :—

J. D. was admitted to the Western Infirmary with symptoms of ruptured gastric ulcer which had existed for four hours. She had typical absence of liver dulness, which is a very strong point in favour of rupture. In addition there was bell-tinkling over the stomach and pain in the subclavicular regions, and we had no hesitation in recommending operation. She felt, however, so well that it was with great difficulty her own medical man persuaded her to have the operation done. On opening the abdomen air and fluid were evacuated in considerable quantity, the ulcer was stitched, and she recovered.

In some cases of great hyperacidity of the stomach gastro-enterostomy has been found of great value, but it is always wise to give a faithful trial to washing out the stomach and careful dieting previous to doing this operation.

The pain which accompanies gall-stones, or what is generally called an attack of biliary colic, is, as you all know, of the most intense kind, and the satisfactory results which we now obtain by the removal of gall-stones from the gall-bladder, cystic duct, and common duct, are well known.

I have already referred in a paper, which was published some years ago in the *International Clinics*, to a point of great interest in connection with the similarity between an attack of gall-stones and an attack due to inflammatory adhesions existing between the gall-bladder and the bowel.

Both patients who happened to be under my care at the same time had the same symptoms, pain and jaundice—both were operated on. In the one case seven gall-stones were removed, in the other adhesions were divided, and both patients remain quite well. Another case of considerable interest which I have not yet published came under observation, and was diagnosed by four medical men of large experi-

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ence as a floating kidney, and all the symptoms of that troublesome complaint were present, but on making an incision over the right kidney it was found to be in normal position, and the swelling was a distended gall-bladder which was drained through a small anterior incision, and the patient did well. There were no gall-stones in this case.

A very large number of gall-stones are sometimes removed, but sometimes one or two may give rise to very urgent symptoms, as in a case recently under my care, sent to me by Dr Alex. Thomson of Glasgow, in which a few very sharp tiny gall-stones were removed. As many as 400 gall-stones have been removed. I have only reached 157, and these were removed in a case complicated with malignant disease.

After operations for gall-stones, a small sinus frequently remains, more especially where there has been much inflammation of the gall-bladder, and it is generally thought that this sinus leads to a gall-stone which has not been removed. This is not, however, always the case, and where there is a long history of possible ulceration of the ducts it is better to leave this discharging sinus alone, unless it is giving rise to pain and other discomforts. I learned this fact through an experience in a case on which I had previously operated and removed thirty gall-stones. A small sinus was left, and an operation was performed to close it. This evidently led to rupture of an ulcerated portion in the duct, extravasation of bile and peritonitis, and death of the patient.

Abscesses of the liver and gall-bladder come under observation from time to time, but are not so frequent in this country as abroad. I happen to have under my care at present a case of abscess of the gall-bladder secondary to ulceration of the bowel, in which drainage of the gall-bladder has been followed by satisfactory result.

Next to biliary colic, the most intense abdominal pain is complained of in acute obstruction of the bowels, whether due to intussusception, bands forming from old inflammation, or obstruction induced by new growths in the intestine, large or small. The prostration which accompanies acute obstruction is often so great that nothing more than an ordinary relieving fæcal fistula can be made, the more completed operation being carried out later.

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In cases of intussusception, the moment the diagnosis is made there should be no delay in operating after a fair trial has been given to inflation, which in a certain number of cases is successful; still, personally I am more in favour of abdominal section and reduction of the intussusception. In obstruction by bands, the pain and vomiting are generally so like the symptoms of a strangulated hernia that the sooner an operation is performed the better, as gangrene of the bowel very quickly takes place. We are apt to be put off our guard by the patient looking better after a dose of morphia, but think of the patients you have seen suffering from a small strangulated femoral hernia. No one here would recommend delay in such a case, however well the patient looked. Why should there be delay, when practically the same conditions exist inside the abdomen.

The mortality in obstruction of the bowels is still extremely high, for nothing pinches our vitality so quickly and so severely as abdominal pain, therefore let us endeavour to deal earlier with abdominal obstructive conditions. I have only once had a patient who refused to have a strangulated hernia operated on, but I have frequently urged early operation in cases of obstruction, and been sent for two days later to perform an almost hopeless abdominal section. The delay which takes place in operating on patients afflicted with malignant disease of the rectum and higher up in the colon causes, I am satisfied, much suffering and progress of the disease.

No operation gives such relief as colotomy in the right inguinal region, when it can be performed there, and every patient on whom I have operated has assured me that they have derived comfort from the procedure. (Dr Haldane, Dr Joss, and others will bear me out in what I say, from their experience of cases on which they have kindly asked me to operate.) One very interesting case which was under my care was that of a woman, aged 33, who was sent to me by Dr Grant, of Blantyre, with acute obstruction, due to a large rectal tumour, and on whom I performed colotomy in the right inguinal region. She had a profuse hæmorrhage five days after the operation, and nearly died, but, thanks to the efforts of my house surgeon, Dr Young, who injected saline solution, she gradually recovered. The tumour entirely disappeared,

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the colotomy wound healed, and she is now quite well. Dr Grant writes me that three months ago she had a child, and is perfectly well in every respect. On examining the rectum I can find no trace of any tumour, and I have no doubt that it was either tubercular or inflammatory, but it had all the feeling of a hard, malignant growth at the time the colotomy was performed.

In cases where the tumour in the bowel is limited and movable, it ought to be removed, and this can be done at any part of the bowel, although the regions we most frequently have to operate in are in the neighbourhood of the cæcum and the descending colon. In any case where symptoms of obstruction recur from time to time an examination under chloroform is essential, as small tumours causing considerable narrowing of the bowel are exceedingly difficult to feel without an anæsthetic.

I show you various instruments which you will find of service in doing enterectomy and end to end stitching of the bowel. In some cases it is better to do lateral anastomosis, and this can very quickly be effected by Senn's plates or Mayo Robson's bobbin. A strong feeling exists among surgeons that we are better to use no foreign body to aid us in doing the above operations, but I think it is fortunate that we possess Murphy's button, Senn's plates, and Mayo Robson's and other bobbins, as there are occasions when very rapid joining of the bowel is required, and I have found them all of service.

There have been difficulties in connection with the passing of Murphy's button, but when used in the colon there is not much difficulty experienced. O'Hara's instrument for end to end stitching seems to be satisfactory and useful. In cases of excision of the cæcum and removal of portions of the colon, I have found Mayo Robson's bobbin of excellent service, as also in excising large intussusceptions which could not be reduced.

The region of the bowel which has attracted more attention than any other in recent years, is the cæcum along with the appendix, and the frequency of operation in that region has increased considerably. Looking over my last 150 abdominal sections, I find that 62 of these were operations for appendicitis, so that it is evident that the importance of operation has now impressed itself on the minds of medical men, indeed some

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people are inclined to think that the appendix is too often removed. However that may be, there is no doubt that the improvement which takes place in patients after operations for appendicitis is very considerable, and the number of lives that are saved by early operation are numerous. We are not yet sufficiently alive to the importance of having local abscesses opened without delay. I am still quite satisfied with the division of appendicitis into three forms, so far as treatment is concerned, and these are the same as I mentioned in the *British Medical Journal* of 25th May 1901 :—

1. Catarrhal, with no distinct lump or swelling around the appendix.
2. Appendicitis with a swelling, which may entirely disappear either by absorption or the formation of a local abscess, which may require an operation, or may burst into one of the viscera, such as the bowel or bladder, or, more seriously, into the free abdominal cavity.
3. Acute perforative appendicitis, which leads to general peritonitis and the formation of abscess in the general peritoneal cavity.

It is unnecessary in an audience like this to go into any further detail with reference to the various operations recommended for appendicitis ; suffice it to say that I would strongly urge the importance of operation after one attack of catarrhal appendicitis, as a patient is lying on the brink of a precipice without operation.

I feel strongly impressed with the great importance of there being no delay after pus has formed in connection with appendicitis in the second division to which I referred, and which can very generally only be diagnosed by increase of temperature and pain over the lump which has formed.

In the third and most serious form of appendicitis every hour of delay is dangerous.

The great safety of removal of the appendix justifies one in urging the operation. In the last 70 cases in which I have operated, we had only one death among those suffering from the simple catarrhal form, and that arose from an entirely different cause a fortnight after the operation, when the patient

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was practically convalescent. In the second form we had three deaths, and in the worst form four deaths, so that the mortality is not by any means a high one.

Having now considered the main indications for abdominal section connected with the peritoneum, the liver, the stomach, and the intestines, it remains for me to refer to the uterus and its appendages. Since Sir Spencer Wells, Dr Thos. Keith, Sir Geo. Macleod, Prof. Geo. Buchanan, Dr Halliday Croom, and others demonstrated the great safety of ovariotomy, the operation is now regarded with no special anxiety, the mortality being one per cent.

The cases which give us some anxiety are those with gangrenous cysts, due to twisted pedicles, but even these, with careful separation of the cysts, do well. Five cases of this particular kind have come under my observation, and have all recovered. One point of interest in these cases is that the temperature does not as a rule go above 100° or 101°, and sometimes is quite normal. Surgeons are all now pretty well agreed as to the treatment of the pedicle by ligature in some form either alone or accompanied with crushing. Lately I have been using a new form of ligature, celluloid thread, which seems to be very durable and quite satisfactory (it can also be used for stitching the bowel).

The great value and relief given by removing the ovaries in cirrhotic disease and chronic inflammatory affections, accompanied or not by suppuration in the tubes, is so well known that I need not do more than mention this. I am quite satisfied that there was a tendency to a too free removal of the ovaries for pain, but I am equally satisfied that women have to suffer a very great deal from which operation would relieve them. I think it would be wise, in doubtful cases, to make an exploratory incision to settle the question whether the ovaries ought to be removed or not. It used to be contended that their removal in cases of fibroid tumour was sufficient to cause disappearance of the tumour, but later observations seem to indicate that it is better to remove the tumour and leave the ovaries ; I think, however, it depends very much on the state of the tumour as to size, hæmorrhage, and inconvenience.

With regard to malignant disease, where the body of the uterus is much affected, the abdominal route for removing it is

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preferable to the vaginal; where the cervix is affected the vaginal route seems the most satisfactory. It is disappointing, however, as in malignant disease elsewhere, the rapidity of recurrence, even although many of us can show cases which have remained free of disease for a number of years.

Regarding wounds or ruptures of the bladder, which are quickly followed by acute peritonitis, the sooner the abdomen is opened, and the rupture stitched, the better for the patient.

Enough has now been said to convince you of the great importance of abdominal section, and it yet remains to be explained how the effect is produced in many cases. If the result of this paper is to impress you with the urgency of early operation in many cases, I shall feel satisfied.

ON THE CO-ORDINATION OF MEDICAL RESEARCH IN EDINBURGH

By D. NOËL PATON,
Superintendent of the Laboratory of the Royal College of Physicians

IN the middle of last century the Edinburgh School stood *facile princeps* in medical research in Great Britain. But since then our position has been seriously assailed by various other schools, and it behoves us to consider how our leadership may be firmly established; or, to look at the question from a somewhat higher standpoint, how we may take our proper share in the advancement of medical science.

It appears to me that our position has been endangered, firstly, by the very great vitality of certain of our rivals, and secondly, by a want of sufficient scientific vitality in Edinburgh, by a tendency to live upon our past reputation. With the former we have nothing to do but to congratulate our younger rivals on their vigour, and to give them our good wishes for their further progress. We do not want them to wait for us, we desire to overtake and to outstrip them in a fair race.

Our own loss of vitality is perhaps a danger inherent in all old and successful schools. The feeling of superiority leads to laxness and to diminished effort. But it has been accentuated in Edinburgh by the absence of that invaluable commercial element in the town, the element which has done so much to make Liverpool a leading medical school, and which helped to raise Owen's College to its position. A strenuous business life undoubtedly reacts on the work of professional men.

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But if we admit the loss of vitality, whether from these causes or from others as well, and if we admit that it is not easy to rejuvenesce, it is still possible that by regulating and directing the strength that is left us we may be able to hold our own among our younger brethren, and to take our fair share in the progress of medical science. It is because I believe that this is possible that I have ventured to-night to discuss the question of the co-ordination of medical research in Edinburgh.

Let us review the materials and facilities that we possess.

The medical profession may be roughly divided into :—

1. A set of older men too busy for research, but with an abundance of clinical and pathological material at their disposal. Some of these have already engaged in research and are well able to guide the work of the less experienced. Others, as teachers, have become familiar with what we know and what we want to know, and if they are worthy of their position they should be able to suggest varied lines for investigation. Some may never have undertaken research or taught, but they too must recognise that, for the credit of the Edinburgh school, advance in medical science must be made here, and they should be only too willing to make their material available and thus to help in the general advance.

2. We have a set of younger men who have, or ought to have, time at their disposal, and who are, or ought to be, jealous of the credit of the school and eager to make their contribution to the advance of medicine. Two factors militate against their taking the part they should take in medical research: firstly, that the system of medical education in Edinburgh does not conduce to the development of the faculty for independent investigation; and secondly, because so many have to make a livelihood in practice and by teaching, and thus their time is so fully occupied that they have not leisure to devote to science. These are evils which have to be faced, but the amount of scientific work done by some of the busiest men shows what determination and energy can effect.

The facilities for medical research in Edinburgh are exceptionally good.

We have, in the first place, abundance of clinical material in the Infirmary, Children's Hospital, Chalmers' Hospital, Fever Hospital, the Poorhouse Hospitals, and the Asylums.

In the Infirmary there is an excellent *post-mortem* department, while various laboratories, as that of the College of Physicians, the Scottish Asylums, and the Pathological, Pharmacological, and Physiological departments of the University are available to workers, and are all more or less suitably equipped.

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The excellent libraries of the Royal College of Physicians, of the Royal College of Surgeons, of the University, and of the Royal Society, are also important aids to research.

It is not for want of men who can direct work, or of men who ought to be able to do work, or of material and facilities for doing work, that we are lagging behind. To me it seems that our want of vitality has led to a want of any co-ordination of any definite plan. A worker here and a worker there takes up and skirmishes round some small part of a subject, often in a quite amateurish way, and makes some paltry advance. But too often, for want of any co-ordination between the different parts of the school, he carries on his work on all too inadequate material, while an abundance of useful matter is going to waste in some other hospital, or even in the next ward, or from want of time he has to take up only one or two of the many questions which present themselves for solution, and thus he misses, it may be, the essential point of what he is working at. And this purely individual work, with its isolation and want of sympathy and encouragement, often wearies men. It wants a soldier of stronger *morale* to do scouting work alone than when in company with others. In the laboratory of the Royal College of Physicians I have over and over again felt the disadvantages of this individual work, and I am glad to say that I have time and again experienced the advantages of assistance and combination. I know nothing more stimulating and delightful than to share the joys and sorrows of research with fellow-workers.

This being the present condition of things, how do I propose that it should be remedied? How can we hope to get the largest amount of the best work turned out of the school? How can we, in fact, redeem the position of the Edinburgh School of Medicine?

I think a beginning might be made by having a conference of the older and younger men, and deciding upon certain subjects which should be taken up and investigated. Then the different parts or divisions of each subject would be formulated, and a group of workers formed to attack it from all available points. Every one who might have material which would be of use would be notified, and would make it his business to supply such material. The investigation would be no longer a matter of personal interest and ambition, but would be for the interest of the whole school, and the laggard worker—and such exists—would be stimulated by his more energetic coadjutor. In carrying out the work where laboratory methods are required—and in what branch of medical science are they not now required?—all the various laboratories would be used according to their special equipments and staff, and the foolish jealousies between

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University and outside laboratories, and even between laboratories in the University, would be diminished. Every one would contribute their share in the advance—the man who provided the material, the workers who engaged upon the investigations, and the heads of the various laboratories who gave assistance and advice in the various lines of work. But I pause to ask—Is this scheme not Utopian? Is there really any chance of having it carried out? There ought to be. The material, the men, and the facilities for work are all here. But you remember Newton's first law of motion, "Every body remains in a state of rest or of uniform motion in a straight line," etc., and the question is whether or not the inertia of the present state of things is not too great to be overcome.

It is for the members of this Society to say whether in their opinion things should be allowed to go on as at present, or whether they are prepared to initiate some movement to bring about an improvement, and thus to increase the output of scientific work in Edinburgh. And I think that it would be most fitting that such a renaissance of medical science should occur under the ægis of our President, who has himself done so much to keep alight the torch of science among us.

NOTE ON STATUS EPILEPTICUS[1]

By Dr A. R. URQUHART,

Physician Superintendent, Murray's Royal Asylum, Perth

The comparative rarity of epilepsy in Scotland as compared with England is marked by the smaller number of epileptics in our asylums, and my experience in Perth has been still further limited in dealing exclusively with the middle class of society. Out of some 800 cases under care during the last 22 years, there have only been five deaths from epilepsy in Murray's Asylum. Cases of general paralysis have been complicated by epileptiform convulsions, and a few cases of senile degeneration have been similarly affected; but I restrict these observations to the following five:—

1. (844) A female epileptic, admitted in 1845 and died in 1893, worn out mentally and bodily. The disease was life-long and progressive towards dementia. No *status epilepticus* occurred.

2. (1735) Male, artist, admitted, æt. 21, 1st May 1876, in a

[1] Read before the Forfarshire Medical Association.

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state of mania, which tended to dementia, with occasional explosions of passion. He was generally incoherent, voluble and impulsive. Probably there was an insane heredity. He had an attack of typhoid fever, and afterwards suffered from hæmorrhoids. Long afterwards, on 14th October 1892, he had an epileptic attack—aged then about 40. On 3rd December another fit was observed, and this was followed by a rapid succession of seizures. Nitrite of amyl mitigated the severity of the fits. On the 4th, nystagmus occurred, followed by Cheyne-Stokes breathing. He died on the 5th December last, exhausted. There was no true *status epilepticus*. *Post-mortem.*—Congestion of the cerebral vessels was marked. The pia arachnoid was deeply affected in this manner. Grey and white cerebral substance hyperæmic. These congestive appearances were so widespread as to negative any localising lesion. The liver was in a state of advanced fatty degeneration. (There was an accessory spleen of small size.) The most important pathological feature of the case was a stricture of the lower bowel at the sigmoid flexure, with some inflammatory exudation of recent development. There were no signs of abdominal trouble in life, but it is possible that reflex irritation of an unstable brain may have been the cause of the epilepsy.

3. (2209) Male, clerk, admitted on 26th October 1893, aet. 39. Heredity of neurosis; immorality, and consanguinity of parents. After three attacks of influenza, on 22nd October he had a severe epileptic fit in church. This was followed by the *status epilepticus*, and he was sent at once to the Perth Royal Infirmary. Severe mania followed, and he made a rapid partial recovery. Aphasia was then a marked feature of the case, and the musical faculty was deeply involved. A cortical irritative lesion in the neighbourhood of the left auditory area was assumed. The *status epilepticus* recurred on the 28th November, and he had thirty motor fits in four hours. On 20th April following he again passed into the *status epilepticus*, and died on the 26th. *Post-mortem.*—The brain was highly congested, and there was an area of softening at the top of the left temporo-sphenoidal lobe. This case, which is of special importance in detail, was published by Dr Hay in the *Journal of Mental Science* for April 1895.

4. (2345) A sailor, admitted on 4th June 1897, aet. 27. Conduct as a boy unsatisfactory, education meagre. Sister epileptic, but other family neuroses denied. At the age of 18 sustained severe injuries of the head by a fall, and two years later developed epilepsy in Calcutta. His mental condition was generally enfeebled after successive maniacal attacks and progressively severe epilepsy. The convulsions began in the left arm, and thence spread to the left face and whole body.

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They were generally more severe on the left side, his head was turned to the left, and there was conjugate deviation of the eyes to the left. The cessation of bromides invariably resulted in increased epilepsy. The question of operative interference was raised, but the family objected in view of the unsatisfactory boyhood, the slight signs of external injury, the lapse of time, and the existence of epilepsy in his sister. *Status epilepticus* occurred on 28th September 1899, and death ensued rapidly. *Post-mortem.*—There was an area of softening of the anterior part of the right frontal lobe. The case was of special pathological importance, and was reported (with illustrations) by Dr Ford Robertson in the *Journal of Mental Science* for January 1902.

5. (2085) A minister, aet. 52, admitted 15th April 1890. No hereditary neurosis admitted. It could not be ascertained when the epilepsy developed; it had certainly persisted for more than three months, and eventuated in a violent attack of mania. This recurred from time to time after seizures of general convulsions, which became increasingly frequent. The patient's skin became deeply bronzed, his health was generally impaired, he passed into the *status epilepticus* on the 27th October 1891, and died the following day. On *post-mortem* examination, all the vital organs were wasted, and his heart was extensively affected by fatty degeneration, as had been suspected during life. There were firm adhesions of the right motor area, with intensely congested cerebral vessels. The case presented no further features of interest.

In these cases of *status epilepticus* the question of venesection arises, and the late Dr Wallis reported favourably on this method of treatment. It might have been adopted in case No. 4, but death ensued rapidly and unexpectedly. I have bled a patient suffering from severe alcoholic epilepsy, complicated with renal and hepatic disease. The fits ceased, but the patient died exhausted within a few days. Dr Keay has bled several patients in the *status epilepticus* in the Inverness Asylum with similar results. On the other hand, Dr Campbell Clark (Lanark Asylum) reported a successful case, in the course of a discussion on an interesting observation by Dr Easterbrook, where puerperal epilepsy had been controlled by large doses of chloral and bromide of potassium per anum. In the same discussion, Dr G. M. Robertson recommended the administration of chloroform, and spoke of a case of *status epilepticus* where the narcosis was just sufficient to prevent severe convulsions. Without chloroform the march of the convulsions was typical of general epilepsy, but under chloroform the discharge became Jacksonian in character.

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Sir W. R. Gowers says that the *status epilepticus* seldom yields to any drug except chloroform, morphia, or hyoscine. He emphasises the necessity for caution in the administration of morphia in these circumstances, and I believe that hyoscine is just as dangerous.

We have used nitrite of amyl with no real benefit, and have given oxygen without any apparent prolongation of life.

Indeed, the treatment of advanced epilepsy is largely unsatisfactory. The absolute degeneration of the cortical cells, and the production of toxins are, I believe, unalterable by present-day methods.

Bromides certainly control epilepsy in many cases. In asylums these salts are used daily, and for prolonged periods; they bulk as largely as chloride of sodium in the daily life of epileptics. They are absolutely useless in *status epilepticus*, and in every case they should be discontinued from time to time, especially when deterioration of mental energy is observable, for one has to determine how far obscuration of mind is due to drugs.

It will be familiar to you that Flechsig lately advised a course of opium preparatory to treatment by bromides, and that he reported very successful results. I have only had opportunity of testing this method in one case, a patient who has had every kind of medicinal treatment known to modern practice. The results were absolutely negative, and I have not heard of any encouraging experiments in this country.

Another patient at present under treatment is likely to succumb to a succession of fits, but his condition is such as to practically preclude the various measures thus briefly indicated. Mr Cotterill operated on him some two years ago, and exposed a degenerated cortex in the left motor area, localised without difficulty. The early results of the operation were to some extent successful, but the slowly advancing degeneration is manifest in more frequently recurring severe fits and great mental obscuration, with marked aphasia.[1]

It will be seen, then, that *status epilepticus* has been rarely observed in Murray's Asylum. Three cases are now submitted. Two of these are remarkable, as having closed the lives of patients affected by localised cerebral lesions of special interest. The other was affected by general wasting and deterioration of vital organs, with marked fatty degeneration of the heart.

[1] This patient has died lately after a single severe fit, death apparently occurred consequent on failure of respiration—the respiratory act having been arrested in extreme inspiration. The heart continued to beat for some time, but artificial respiration failed because of the extreme rigidity of the chest walls.

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OBSERVATIONS ON CASES OF PERNICIOUS ANÆMIA, WITH SPECIAL REFERENCE TO THE BLOOD CHANGES

Part of a Thesis presented to the University of Edinburgh

By ALEXANDER GOODALL, M.D., M.R.C.P.E.,
Edinburgh

Concluded from page 219

SUMMARY OF CASES.

In the foregoing pages we have given the clinical records of nine cases of pernicious anæmia. Though the number is small, a short summary of their main features may be of some value.

As regards *sex*, six were males and three females.

As regards age, the extremities were 11 and 73.

Of the other seven, three were under 40—21, 27 and 33. The remaining four were between forty and fifty.

As regards *Etiology*, there is no definite history of a causal agent in any of the cases.

Two of the patients, however, ascribed their illness to accidents and one to excessive cycling.

In three of the cases there was no history of previous depressing conditions of any kind, while the others narrated a variety of antecedent conditions more or less connected with the onset of their illness.

Symptoms, etc.—All the patients complained of weakness, and in seven of the cases it was the first symptom noticed. It is interesting to note that in a recently published series of 110 cases, Cabot (*American Journal of the Medical Sciences*, August 1900) found muscular weakness to be the earliest and the most frequent symptom.

Since Hunter (*Lancet*, Jan. 27th, Feb. 3rd and 10th, 1900) has put forward the view that dental caries may be an important factor in the causation of the disease, it is interesting to note the condition of the teeth.

In four cases they were good; in one much neglected, but not carious; in the remaining four they were both decayed and dirty.

Five of the cases at some time were troubled with sickness. Four had diarrhœa.

In four of the cases the spleen was enlarged, but in none of the cases was the enlargement marked.

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Cardiac murmurs could be heard in every case. The most constant murmur was a systolic mitral.

In five cases cough was complained of. In two there were physical signs of pulmonary conditions to account for it, but in the other three the result of physical examination was entirely negative. In these three cases the cough was short and irritating, was not accompanied by expectoration, and occasionally kept the patient from sleeping.

The specific gravity of the urine was rather low in all the cases. In four urobilin was present at times. In one of these it was found on every occasion on which the urine was examined. Symptoms referable to the nervous system were present in five of the cases.

One of these was Case VII., an old man of 73, who had senile dementia.

The other four cases complained of tingling and numbness of the fingers, and one in addition complained of difficulty of vision, though no change in the fundus and no error of refraction could be detected.

Tenderness over the long bones was found in three cases, but in no case was it elicited without a leading question.

As regards results, five cases died. Of the remaining four, only one so far recovered that the blood films would not be looked upon with suspicion. The other three passed from immediate observation with red cells numbering 1,460,400, 1,400,000, and 738,000 respectively.

In spite of the vast accumulation of literature regarding pernicious anæmia, very little is to be found regarding the bearing of the different symptoms on prognosis.

This is perhaps due to the belief that the result is practically always fatal, but since the duration varies so greatly it is of importance to have some indication of how any individual case is going.

Information on this point is more readily obtained from the blood examination, as we shall subsequently endeavour to show, but detailed examination of the blood is not always obtainable, and in any case, it should be supplemented in every way possible.

The age of the patient does not appear to affect prognosis.

The incidence of such symptoms as sickness or diarrhœa, yellow colour of the skin or œdema does not appear to affect prognosis.

Patients may and frequently do improve after a feverish attack, but, on the other hand, they may get rapidly worse.

Hæmorrhages seem to be of grave prognostic omen. Four of our series showed this symptom and all died.

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James ("International Clinics," III., October 1897) mentions twenty-four cases, of which twelve died. Hæmorrhages occurred in five of the fatal cases and not in any of the others.

F. W. Mott (*London Medical Record*, December 20th, 1899) reports retinal hæmorrhages in all of five fatal cases.

Bramwell ("Anæmia," etc., 1899, p. 98) regards hæmorrhages other than retinal hæmorrhage as of grave prognostic omen, but does not consider the latter so serious.

Complications involving the respiratory system appear to be of grave significance.

We may also note that urobilin occurred in the urine in four of the five fatal cases and in none of the others.

The Blood in Pernicious Anæmia.

The blood in pernicious anæmia presents a series of changes, which may be tabulated as follows:—

I. Gross changes in—

1. Colour.
2. Fluidity.
3. Coagulation time.
4. Specific gravity.

II. Changes seen in fresh specimens in—

1. In the number of cells and plates.
2. Rouleaux formation.
3. The amount of fibrin.
4. The size of the red cells.
5. The shape of the red cells.
6. The amount of hæmoglobin.

III. Changes seen in stained specimens in—

1. The staining reactions of the red cells.
2. The presence of nucleated red cells.
3. The relative proportion of the white cells.
4. The staining properties of the white cells.
5. The presence of abnormal white cells.

(The blood in anæmia due to intestinal parasites, *e.g.* ankylostoma duodenale closely resembles that of pernicious anæmia. I have no personal experience of the condition, and leave it out of account in the following description.)

I. Gross Changes.

1. *Changes in Colour.*—When the anæmia is not marked, slight pallor may be the only noticeable feature.

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In more marked cases the blood may be pale and yellowish, and often looks streaky as if the corpuscles were not evenly distributed in the plasma. In extreme anæmia, precipitation of the corpuscles as the blood exudes seems actually to occur. Usually the precipitated corpuscles are red, but Coles ("The Diseases of the Blood," 1898) has described an appearance like coffee grounds. This I can confirm, but have only noted it in moribund cases, and in these not constantly.

Observations on the sp. gr. of the plasma in these cases are required. Grawitz, however, states that the plasma in pernicious anæmia has a relatively larger amount of solids than in secondary anæmia, in which this precipitation of the corpuscles is not seen.

2. *Changes in the Fluidity.*—The blood in pernicious anæmia is more fluid than usual, and has a lower surface tension. The increased fluidity is generally proportionate to the degree of anæmia. It is not generally marked when the corpuscles are over 2,500,000.

3. *Changes in Coagulation Time.*—Coagulation time is delayed, and this change may persist after improvement in other respects.

4. *Changes in Specific Gravity.*—Sp. gr. is always diminished, and the diminution is roughly proportionate to the diminution of hæmoglobin.

II. Changes seen in Fresh Specimens.

1. *Changes in the Number of Cells and Plates.*—Diminution in the number of red cells is generally marked. The average number in our eleven cases at the first examination was 1,049,090.

Cabot ("Clinical Examination of the Blood," 1900) gives the average number when the patient first came under observation as 1,200,000. In a more recent paper (*American Journal of the Medical Sciences*, August 1900) he gives the following figures:—

500,000—1,000,000 in 27 cases.	
1,000,000—1,500,000 in 45 „	
1,500,000—2,000,000 in 34 „	
Total cases under 2,000,000,	106
2,000,000—2,500,000,	4
Total, .	110

The numbers may fall very low indeed. Our lowest count was in the case of a boy (Case V.) with hæmorrhage from

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the gums, 295,000. The lowest count on record is 143,000 (Quincke).

The number of the corpuscles alone is of importance from a diagnostic point of view. F. P. Henry (*American Journal of Medical Sciences*, August 1900) writes as follows :—

"According to my experience there is no disease, except pernicious anæmia, in which the number of the red corpuscles is at any time reduced below 20 per cent. of the normal—*i.e.* below 1,000,000 per c.mm."

With a reservation in favour of diseases complicated by hæmorrhage, I am disposed to agree entirely with this statement.

The number of red cells has a prognostic significance. The lowest count after which a remission has followed in our series is 840,000 per c.mm. Another case improved and remained well for a year after the red cells had fallen to 872,000. James ("International Clinics," III., October 1897) states that diminution to 500,000, with 10 per cent. hæmoglobin, is only met with in fatal cases. Cabot (*American Journal of the Medical Sciences*, August 1900), on the other hand, states that remissions may occur even after the red cells have fallen as low as a half million per c.mm.

I know of no instance of remission when the red cells had fallen below that figure.

A few weeks' observation of the number of the red cells gives a pretty certain indication of how a given case will go on. Thus a case whose corpuscles are well under 1,000,000—say 800,000—rarely continues long at that stage. If the corpuscles have shown a distinct tendency to fall in about a fortnight, we may predict a fairly early termination.

On the other hand, if the tendency of the corpuscles is to rise, we generally find that our case will fall into one of two groups :—

(*a*) If the symptoms are well marked, we may expect a fairly satisfactory remission.

(*b*) If symptoms are not marked—dyspnœa, yellow colour, and fever absent or slight—the case will probably run a somewhat chronic course. The corpuscles will reach to between one and two million, and remain at that point, it may be, for years.

The number of white cells is always diminished. Leucocytosis in adults is always due to a complication. The average number in our cases at the first examination was 5687. This figure is considerably higher than that usually stated. This diminution is of some diagnostic value, as in many cases of secondary anæmia there is a marked leucocytosis.

Opinion varies as regards the numbers of the blood plates

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Stengel, V. Limbeck, and Coles are among those who hold that they are increased, while Hayem, Muir, and Gulland maintain that they are diminished. In only one of our cases, and that not quite typical, were they increased at the first examination. In all the others they were diminished. They may be numerous in the blood during remissions.

2. *Changes in Rouleaux Formation.*—Rouleaux formation is very slight in marked cases and the red corpuscles are seen in separate groups of four or five. This condition seems to depend, in part at least, on two factors:—

(*a*) The paucity of corpuscles in a given amount of plasma; and

(*b*) On poikilocytosis and diversity of size.

The latter point can be demonstrated by mixing a drop of healthy blood with a drop of blood from a case of pernicious anæmia. The healthy corpuscles seem not only to form rouleaux with one another, but also with some of the normal cells from the anæmic blood, while the megalocytes and poikilocytes are left solitary or in small groups.

3. *Changes in the Amount of Fibrin.*—Fibrin is always diminished, and this diminution persists even after the red cells have risen to above 3,000,000.

In one of our cases (IV.) it was increased, but the increase was probably due to complication by rheumatism.

4. *Changes in the Size of the Red Cells.*—This is always a marked feature in pernicious anæmia, and in no other condition do we find such diversity or such extremes of size.

While all sizes may be present, the average is considerably increased, and this is one of the characteristic features of the disease. It is one of the last features to disappear during a remission.

5. *Changes in the Shape of the Red Cells, Poikilocytosis.*—In the great majority of cases many of the red cells are deformed. Perhaps the commonest variety is the oval cell. Now and again we meet with a case in which deformity is very slight. It has been stated that the amount of poikilocytosis depends on the degree rather than on the type of the anæmia. The statement is only partly true.

Occasionally we may find poikilocytosis less marked in a severe case of pernicious anæmia than in a mild one, but on the whole, poikilocytosis is generally much more marked in cases of pernicious anæmia than in cases of anæmia corresponding in degree but of another nature.

6. *Changes in the Amount of Hæmoglobin.* The amount of hæmoglobin is always reduced, but when the case is marked the reduction is not proportionate to the reduction in the number

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of corpuscles. Hunter (*Practitioner*, September 1889) considers this the only characteristic feature presented by the blood in pernicious anæmia.

Von Limbeck ("Pathologie des Blutes," 1896) considers it a feature of all severe anæmias, but his view is not borne out by other observers.

The relative high percentage of hæmoglobin is due, as Henry (*American Journal of the Medical Sciences*, August 1900) points out, to three factors:—

(1) The large size of the corpuscles.

(2) The presence of microcytes which are often not seen when counting the red cells, and in any case are not counted.

(3) The highly-coloured plasma during exacerbations.

In all our cases whose corpuscles were under one million the colour index was one or over one, except in a fatal case (V.) with hæmorrhages.

The colour index tends to be higher throughout in pernicious anæmia than in other anæmias, but the colour index is not above one nearly so constantly as the text-books would indicate. As the case improves the colour index tends to fall. A high colour index is generally a serious indication.

III. Changes seen in Stained Specimens.

1. *Changes in the Staining Properties of the Red Cells.*—In any marked case of pernicious anæmia the majority of the red cells seem spherical and show no central concavity. Others, however, may be represented by mere rings.

Streaks and fissures are common.

The red cells take up basic dyes more readily than in health, and this character is more marked in pernicious than in any other form of anæmia except malarial.

The change is sufficiently marked in even moderately severe cases to be easily distinguishable without the aid of a microscope.

If a film of healthy blood and a film of blood from a case of pernicious anæmia be made on different parts of the same cover slip, to ensure exactly the same technique in staining, the difference is striking.

When eosine and methylene blue are used, the healthy film looks a bright red. The pernicious anæmia film is dark purple.

The change is not so well seen with the naked eye when Ehrlich's triple stain is used; but with the microscope, while the healthy red corpuscles appear bright orange, the red cells in pernicious anæmia appear dark brown or even greyish. The change is often exceedingly well marked in the megaloblasts.

Granular degeneration of the red cells is frequently seen. When methylene blue or hæmatoxylin is used, either with or

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without an acid counterstain, the affected cells show numerous very fine dark blue points.

The change is not one which will much help in the diagnosis of pernicious anæmia. Of its prognostic significance I am ignorant, except that I have only seen it in the gravest conditions.

2. *The Presence of Nucleated Red Cells.*—Nucleated red cells occur in pernicious anæmia in three varieties—megaloblasts, normoblasts and microblasts. A few cases have been recorded —a recent one by Sir Dyce Duckworth (*British Medical Journal*, November 10th, 1900)—in which they were not found, but their presence is of great diagnostic importance. Indeed, when megaloblasts are more numerous than normoblasts, the case is almost certainly pernicious anæmia.

We do not, however, invariably find megaloblasts the more numerous. As a case improves megaloblasts are apt to be outnumbered by the normoblasts, and may disappear while normoblasts persist. It is exceedingly rare to find megaloblasts in any condition simulating pernicious anæmia, and in no other condition are they numerous or as numerous as the normoblasts.

Microblasts are more rare, but have the same diagnostic and prognostic bearing as the megaloblasts, and their numbers may be taken together to compare with the number of normoblasts.

The type of megaloblasts seems to give some information as regards prognosis.

Thus the megaloblast with a large nucleus with obvious chromatin seems to be of more serious import than the megaloblast, which looks like a large normoblast or the type with a small dark nucleus.

Von Noorden first called attention to sudden outpourings of nucleated red cells which have been termed "blood crises." These have generally been found in the blood during recovery from hæmorrhage. Curiously, the only two instances in which I have met with the phenomenon in pernicious anæmia have been in cases (V. and VII.) shortly before death.

In one case (V.) normoblasts were mostly found. In the other (VII.) all forms had greatly increased, but the most numerous were megaloblasts of a normoblastic type.

3. *Changes in the Relative Proportion of the White Cells.*—As we have already seen, the total leucocyte count is diminished, and the usual condition is that the polymorphonuclear cells are diminished, consequently the relative number of lymphocytes is high.

The usual condition is that the percentage of lymphocytes is just under 50 or slightly higher. Usually as the case gets worse, the percentage of lymphocytes rises.

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Ewing, however, has noted a rise of the percentage of polymorphonuclear cells as death approached, although no complication could be discovered.

Observations on the percentage of the white cells week by week have led me to believe that a connection exists between the temperature and the percentage of the polymorphonuclear cells, although in other febrile conditions no such connection can be observed.

The temperature may rise owing to a complication and cause leucocytosis. Obviously in this case the percentage of the polymorphonuclear cells will be increased.

On the other hand the temperature may rise either as the result of a complication or as an intrinsic feature of the disease, and either no increase or an actual diminution of the total number of white cells occur. Even in this case the percentage of polymorphonuclear cells will be found to be increased.

The conclusion we therefore arrive at is that a rise in temperature causes a diminution in the total number of lymphocytes, which may or may not be accompanied by a slight corresponding rise in the total number of polymorphonuclear cells. In other words, a rise in temperature causes an increased percentage of polymorphonuclear cells at the expense of the lymphocytes.

The following tabular statement from cases where the data are sufficient and uncomplicated bears out this view.

Case.	Date.	Temp.	Total Leucocyte Count.	Percentage of Polymorphs.	Remarks.
I.	July 28th	100	2,500	67·26	872,000 Red Cells.
	Aug. 3rd	99·5	4,375	53·46	1,182,000 „
	Aug. 31st	98·6	4,650	49·46	2,000,000 „
II.	May 22nd before serum	98·6	2,500	43·56	Lymphos. 1,400 per c.mm.
	„ 22nd after serum	103·6	3,125	59·40	„ 1,250 „
	June 15th	103	2,812	64·34	—
	July 30th	98·6	2,500	54·38	—
IV.	Jan. 28th	101	6,250	75·24	840,000 Red Cells.
	Feb. 11th	104	2,812	84·16	1,200,000 „
	Apr. 28th	98·4	6,562	58·36	4,700,000 „
XI.	July 1st	103	5,625	78·28	680,000 „ moribund
XIV.	Oct. 22nd before serum	99	7,812	56·41	Lymphos 3,501 per c.mm.
	„ 22nd after serum	100	10,313	69·30	„ 3,114 „
	Nov. 2nd	100·5	10,000	68·30	—

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It may be noted in this connection (see Tables I. and II.) that in Case I., with a falling temperature, the percentage of polymorphonuclear cells steadily fell although the case was improving.

In Case XIV., with a rising temperature, the percentage of polymorphonuclear cells steadily rose although the case was becoming worse.

We may further note that on each occasion on which a leucocytosis was induced by antistreptococcus serum, it was accompanied by an actual fall in the total number of lymphocytes. The rule that the percentage of lymphocytes rises as the case gets worse holds good only in the absence of fever.

Other factors, too, are of greater importance in determining prognosis than the relative numbers of the white cells, for the percentage of lymphocytes is apt to be persistently high in a group of chronic cases who do not improve but whose course is generally very protracted. In moribund cases there may be a terminal lymphocytosis. This is almost peculiar to pernicious anæmia. (It occasionally occurs in leucocythæmia.) An extreme example was noted in Case V.

Though late in the day, it may be of value in clinching a diagnosis before the case is seen by the omniscient pathologist.

The percentage of eosinophiles is sometimes increased, more commonly diminished. I agree with Cabot's statement that no prognostic significance can be attached to their numbers.

4. *Changes in the Staining Properties of the White Cells.*—Nothing of clinical importance has yet been ascertained in connection with the arrangement of the nucleus and the granules.

The iodine reaction described by Goldberger and Weiss occurs occasionally in severe cases of pernicious anæmia, but as a clinical test of the condition it is of little value. A good account of the technique and significance of the reaction is given by Theodore Dunham in the *Annals of Surgery* for June 1900.

5. *The Presence of Abnormal White Cells.*—A certain percentage of myelocytes may be found in pernicious anæmia. Cabot's average of 52 cases is 2 per cent. When it is remembered that the total number of leucocytes is diminished their actual numbers must be very small. Their presence is in no way distinctive of pernicious anæmia. They are probably more numerous in the more serious cases.

Value of the Blood Examination in Differential Diagnosis.

In a well-marked case the blood presents features easily distinguishable from those of any other condition except the parasitic anæmias not likely to be met with in this country.

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The differences between the blood in pernicious anæmia and chlorosis need hardly be discussed outside a class-room.

Much has been written about the difficulty of diagnosing pernicious anæmia from gastric cancer. I cannot help thinking that this difficulty has been exaggerated and that if in doubtful cases a careful differential count of 1000 white cells were made, and at the same time the numbers and character of the nucleated red cells noted, less would be heard of it.

Cabot and Henry have done good service in dealing with this point in papers published simultaneously in the *American Journal of the Medical Sciences* for August 1900.

Cabot writes: "It is true that in two cases of typical pernicious anæmia diagnosed as such by Ehrlich himself, a cancerous nodule the size of a walnut was found in the stomach *post-mortem*, but in such cases I see no sufficient reason for believing that the cancer was the cause of the anæmia. Cancerous growths are not usually accompanied by any considerable degree of anæmia until they have reached a considerable size. It seems to me more reasonable to suppose that in Ehrlich's cases the cancerous nodules occurred as a complication and not as the cause of the anæmia. Latent cancerous growths complicating other diseases have been repeatedly found, and no one would consider a case of nephritis or phthisis due to cancer of the stomach because such a growth was found in the stomach *post-mortem*."

Again, Henry writes: "I admit the possibility of a reduction of the number of the red corpuscles in gastric cancer to 40 or even to 30 per cent. of the normal, *i.e.* to figures characteristic of pernicious anæmia, although I have never met with such a condition. Supposing such a case to exist, I would regard it as one of pernicious anæmia complicated with gastric cancer, or as one of gastric cancer complicated with pernicious anæmia, for the figures last mentioned are characteristic of pernicious anæmia and not of gastric cancer."

The following points as regards the blood condition serve to distinguish the two diseases:—

1. The reduction of red cells is greater in pernicious anæmia than in cancer.

2. The reduction of hæmoglobin relative to corpuscles is not so great in pernicious anæmia as in cancer.

3. The average size of the red cells is greater and polychromatophilia is marked in pernicious anæmia. In cancer the cells are small and may show fissues, but not so marked polychromatophilia.

4. Megaloblasts are present generally in greater number than normoblasts in pernicious anæmia. Their mere presence is of

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great importance, as, although normoblasts are common, megaloblasts occur with very great rarity in cancer.

5. In the absence of complication there is no leucocytosis, and in the absence of fever there is lymphocytosis in pernicious anæmia. In cancer leucocytosis is the rule; lymphocytosis does not occur.

There are times in the course of pernicious anæmia cases, when it is impossible to diagnose it with certainty from the blood examination alone. This is especially found in chronic cases and in cases during a remission whose red cells number between one and two or even three million and whose colour index is low. The blood cannot be distinguished from that of secondary anæmia, though the real nature of the case may be suspected from the high percentage of lymphocytes. Clinically the absence of any definite history of a cause and the lack of improvement add to our suspicions till an attack of fever, dyspepsia or yellow discoloration brings us nearer certainty. Sooner or later, however, the blood examination will furnish data to warrant a definite diagnosis.

Value of the Blood Examination in Prognosis.

The prognostic value of the different features of the blood has already been discussed.

It is now generally recognised that the disease is fatal, and six years is given as the limit of life after the case comes under observation. Taking into account the patient's history, however, many cases must last longer.

It is of importance for us to know what course a given case is likely to run.

Four groups of cases may be distinguished, and in each group the blood characteristics have something in common.

I. Acute Favourable Cases. This group is represented only by Case IV.

1. The symptoms are marked.
2. Red cells are much diminished, but show a tendency to rise.
3. Megaloblasts are atypical and not numerous.
4. Normoblasts are numerous.
5. The colour index is high but tends to fall.
6. Polychromatophilia is not marked.
7. The percentage of polymorphonuclear cells is high.
8. Myelocytes are absent or scanty.

Course.—A remission to a fairly normal condition, which may be maintained for years.

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II. CHRONIC CASES. This group is represented by Cases II., X. and XI.

1. Symptoms are not well marked.
2. Red cells tend to remain about one or two million.
3. Megaloblasts are absent or scanty.
4. Normoblasts are absent or scanty.
5. The colour index is generally below one.
6. Polychromatophilia is slight.
7. The percentage of lymphocytes is high.
8. Myelocytes are scanty.

Course.—Apt to be chronic. Patients can work though they feel weak; and though febrile attacks, etc., may occur, they have little bad effect. Improvement seldom occurs, but the duration may be for several years.

III. SUBACUTE CASES. This group is represented by Cases I., III. and VIII.

1. Symptoms are fairly well marked.
2. Red cells about one million, showing slow and irregular tendency to rise.
3. Megaloblasts are numerous.
4. Normoblasts are less numerous than megaloblasts.
5. The colour index is high.
6. Polychromatophilia is distinct.
7. The percentage of lymphocytes is high in the absence of fever.
8. Myelocytes are fairly numerous.

Course.—Symptoms improve, and the blood improves to a certain extent. The duration is about two years, but complications may cut it short.

IV. ACUTE UNFAVOURABLE CASES. This group is represented by Cases VII., IX. and XII. (Case V. also belongs to this group, but is complicated by excessive hæmorrhage.)

1. Symptoms are marked, and there may be hæmorrhages.
2. Red cells are about one million, and tend to remain or go lower.
3. Megaloblasts are typical and numerous.
4. Normoblasts are less numerous than megaloblasts.
5. The colour index is high.
6. Polychromatophilia is marked.
7. Percentage of lymphocytes is high in the absence of fever.
8. Myelocytes may be numerous.

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Course.—A fatal termination in a few months.

Treatment.—The treatment of pernicious anæmia is unsatisfactory. Many different measures have been tried and benefit has followed some of them. Unfortunately results are generally published long before it is known whether the improvement noted has been permanent or the case has merely undergone a remission.

Striking improvement has followed the indirect transfusion of blood as described by Brakenridge (*Edin. Med. Jour.*, Nov. 1892).

Affleck (*Brit. Med. Jour.*, 1892) and Gibson (*Edin. Med. Jour.*, Oct. 1892) have also published cases in which marked improvement followed.

Of this method of treatment Gulland ("Encyclopædia Med.," I. p. 171) states that when a case is going down it does harm, when a case is improving and there is a demand for fluid it does good.

Again, improvement has followed the use of red bone marrow either fresh or as a glycerine extract.

Cases are recorded by Dixon Mann (*Lancet*, March 10th, 1894), Fraser (*Brit. Med. Jour.*, June 1894), Drummond (*Brit. Med. Jour.*, May 1895), Duckworth (*Brit. Med. Jour.*, Nov. 1900) and many others. Von Ziemsson recommended hypodermic injections of defibrinated blood—25 c.c. into each thigh.

For the different symptoms a host of different measures have been recommended.

Milk diet, artificially digested food, full diet and wine have been recommended.

Hydrochloric acid, salicylate of bismuth, salol and beta-naphthol and the various nostrums of chemical houses have all their advocates. Recently Cabot (*American Journal*, August 1900) has suggested the use of purgatives in the hope of preventing the absorption of pernicious substances from the alimentary canal.

On the ground of Hunter's view of the pathology, anti-streptococcus serum has recently been employed. So far as I know the only published result[1] is Elder's case (*Lancet*, April 21st, 1900). Striking benefit certainly followed, but again we are left in doubt as to the permanency of the improvement. Eighteen injections, each of them consisting of about 10 c.c. of serum were given, and it is stated that the patient "had no constitutional symptoms after them."

In every instance of the administration of serum in our cases

[1] Since this was written Hunter has communicated a case to the Royal Medical Society of London (*Brit. Med. Jour.*, March 30th, 1901).

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a definite reaction followed in about three hours with doses of only 1 c.c. No good effect could be demonstrated.

It will be noticed that there is no common *rationale* for any line of treatment. Even arsenic, perhaps the most widely-used remedy, is given for a variety of reasons according to the belief of the physician. Bramwell first introduced it, judging from its beneficial action in fatty heart that it should benefit a disease in which fatty changes are so marked.

Stephen Mackenzie (*Lancet*, Feb. 7th, 1891) classes it as an anti-hæmolytic.

Stockman and many others hold that it stimulates hæmogenesis.

Hunter suggests that it acts locally on the mucous membrane of the stomach and intestines.

Copeman holds that it lessens the vulnerability of the corpuscles.

Whatever be its action, it is probably the most useful remedy in pernicious anæmia we possess.

Whatever view of the pathology we adopt, our main efforts as regards treatment must be directed to stimulating hæmogenesis. Even then we are, as it were, merely flogging a tired horse, but we must try to keep the horse going.

I would venture to plead that our treatment should be based on our knowledge of the symptoms and the information to be gained by the blood examination, rather than on our belief in any one of the various views of the pathology of the disease.

Thus when alimentary disturbances are present intestinal antiseptics should be given, and if severe the stomach may be washed out, but the mere theory of intestinal absorption of toxins should not lead us to take these measures indiscriminately and in the absence of suggestive symptoms.

Where a case resists ordinary means and is rapidly getting worse, any one of the measures referred to which seems most appropriate should be tried, but in ordinary cases we might sum up the treatment as follows:—

In bad cases rest in bed is essential. Care must be exercised with regard to the diet, but as soon as possible it should be as rich as the patient's digestion will allow. It will, at least, do no harm to see that the teeth are attended to.

If gastric intestinal symptoms arise, milk diet and the administration of antiseptics such as beta-naphthol should be employed.

Hæmogenesis should be stimulated—

(*a*) When the colour index is high, say above ·8, arsenic alone should be employed in very gradually increasing doses. Iron will probably do harm.

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(*b*) When the colour index is lower than ·8, iron and arsenic should be given together.

If the least sign of gastro-intestinal irritation should occur, these drugs should be stopped for a week unless the patient's condition is urgent from excessive bloodlessness.

Obituary

James Robertson, L.F.P.S., Glasgow

THIS fine old man was one of the most typical country practitioners of Scotland, and his death, after having nearly completed his eighty-first year, leaves a distinct blank in his native county. He was educated at the Parish School of St Ninians, took his diploma in Glasgow in 1841, began practice at Dysart where he remained a very short time, returning to his native county as assistant to the late Dr Hamilton of Falkirk. Dr Hamilton was a very old and successful practitioner who worked with untiring energy to a great age. About fifty-seven years ago Dr Robertson commenced practice in his native village of Bannockburn, and worked there for fifty-five years. He retired from active practice two years ago. With great natural shrewdness and high professional abilities, he was noted for his unremitting attention to all his patients, rich or poor. His kindness of heart gained the esteem and affection of all with whom he came in contact. His practice must have involved much toil, as it extended over a wide district. For more than forty years he was Parochial Medical Officer for the eastern division of the large parish of St Ninians.

The respect and affection of his patients was shown by a public testimonial presented to him about the time of his professional jubilee. With the exception of an occasional day's fishing in the summer, Dr Robertson hardly ever took a holiday. He worked enthusiastically with his microscope. His wife died about nine years ago, and he has left two sons—one, Dr James Robertson of Montgomery, the other a well-known writer to the signet in Edinburgh.

A well-spent, strenuous, self-devoted life, lived in modesty, and yet winning the respect and esteem of all who knew him was the lot of this good man.

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Meetings of Societies

Aberdeen Medico-Chirurgical Society

A MEETING of this Society was held on 6th March—Professor Finlay, President, in the chair.

The evening was devoted to a discussion on *The Treatment of Pneumonia*, opened by Dr G. M. Edmond.

Dr Edmond said that the history of the treatment of acute pneumonia reflected the theories of the nature of disease and of its treatment current at various epochs. Up till fifty or sixty years ago, pneumonia was looked upon as an acute inflammation directly produced by the action of cold, and its treatment was that of all acute inflammations, viz., antiphlogistic—by bleeding, tartar emetic, and mercury. In 1846, statistics from the Homœopathic Hospital in Vienna regarding the treatment of pneumonia attracted attention. Skoda and Diete in Vienna, as the result of experiment, came to the conclusion that an expectant method of treatment gave excellent results. Dr Hughes Bennett in Edinburgh published a series of cases treated without bleeding, antimony and mercury, with a very small mortality. Gradually the pendulum swung from the heroic treatment to a purely expectant one, and by the year 1860 antiphlogistic treatment had practically disappeared. This led to the conclusion that pneumonia was a disease running a short and sharp course, which, if not too much interfered with, tended to get well with very little treatment. Following upon the expectant method, came the era of depressants, such as aconite and antimony with constant poulticing. To this succeeded the routine method of giving carbonate of ammonia, digitalis and senega in all cases. Coming to our own time, he hoped that a rational method of treatment had followed our increased knowledge of the etiology and natural history of the disease. What had been the fruit of the discovery of the pneumococcus? Efforts had been made to destroy the organism by intratracheal and intrapulmonary injections of germicidal agents, and also to destroy the toxins of the pneumococcus by an antitoxic serum. The present-day treatment of a case of acute pneumonia was as follows:—Simple uncomplicated cases required little drug treatment: salines, such as acetate or citrate of potash or acetate of ammonia, might be given, but it was of greater importance to see that the patient was properly clothed, that his room was cool and well aired, that his skin was well sponged with tepid or cold water, that his diet consisted of soups and milk, with the addition of lime-water or potash or soda water, and that

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his thirst was relieved by water or barley water or lemon water; if pain was present, it might be relieved by warm fomentations or poultices; stimulants should not be given, unless a distinct necessity for their use arose: the chest should be thoroughly explored at the outset, but afterwards the amount of examination should be restricted to what the patient could easily bear: pulse, temperature and respiration should be carefully registered and duly studied. All were agreed that unless the temperature was high, *e.g.* 104° F. or over, no special treatment beyond what had been indicated was necessary for its relief; antipyretic drugs with the exception perhaps of quinine, were to be avoided: hydrotherapy was much to be preferred, *e.g.* tepid or cold sponging, a cold pack or cold bath, or the application of a bladder filled with ice to the chest. If warm applications failed to relieve pain, a few leeches or a small blister might be necessary; if pain was very urgent, the subcutaneous injection of gr. $\frac{1}{4}$ or gr. $\frac{1}{8}$ of morphine would be necessary. As regards the use of opium in acute pneumonia authorities differed, some, *e.g.* Wilks, holding that it is one of our best remedies; others, *e.g.* Gairdner, maintaining that it is a very dangerous drug. His view was that, where pain and restlessness were extreme, especially in the earlier part of the disease, opium in some shape was invaluable: in the later stages, where cyanosis and dyspnœa were marked features, it must be given with sparing hand on account of its power of lulling the respiratory centre. When dyspnœa from extensive lung consolidation with overloading of the right heart was a prominent symptom the application of a few leeches to the chest or the abstraction of a few ounces of blood from the arm was indicated. In uncomplicated cases in young healthy subjects the use of alcohol was not called for; in older subjects, especially those who were debilitated or who had been addicted to the free use of stimulants, it was necessary, but no fixed rule as to the amount could be laid down: the state of the pulse must be our guide. The state of the respiration was the index as to the exhibition of ammonia; in the presence of dyspnœa and cyanosis ammonium carbonate was one of our best remedies. When alcohol and ammonia failed, or when there were signs of marked cardiac failure, strychnine given subcutaneously was of the utmost value. At one time the use of digitalis in the treatment of pneumonia was almost universal, and certainly the quick, irregular, low-tension pulse of this disease in its severer forms seemed to point it out as of good promise, but, unfortunately, in a febrile disease like acute pneumonia, digitalis did not seem to be of anything like the same value as in the failing heart of mitral disease. The inhalation of oxygen had been much lauded, and the relief of

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dyspnœa and cyanosis under its use was marked but transitory: physicians now expressed disappointment with its use, and it had fallen a good deal into abeyance. Delirium was a serious complication of pneumonia, and required special treatment: an extra dose of alcohol in the evening or, in alcoholics, digitalis had been found useful; the bromides and chloralamide or trional were sometimes of service, and, if the temperature was high, the application of cold in some form was indicated. Sleeplessness was often troublesome and difficult to treat: tepid or cold sponging or a little warm alcohol were often sufficient; when dyspnœa and cyanosis with difficult expectoration seemed to be the cause, sinapisms, strychnine subcutaneously, and ammonia did good; when dyspnœa and cyanosis were not marked signs, and when nervous exhaustion seemed to be the cause, opium in some form was the best remedy. Where pericarditis was diagnosed, a blister over the præcordial region or the withdrawal of fluid when present in quantity was indicated. The infusion of normal saline fluid had recently been employed with some success.

Professor Finlay, having summarised the teaching of his student days, said that a great change had gradually taken place in the treatment of pneumonia, and that most so-called antiphlogistic measures had been relegated to the limbo of almost forgotten heresies. Even blood-letting was scarcely practised now: the swing of the pendulum had perhaps carried us too far in that particular. The place of active treatment had been gradually taken by what may be called the expectant method, based upon the view that nothing will cure the disease, that it is spontaneously curable in most cases, and that the aim of the physician must be to act the part of a skilful pilot until the crisis is reached. It was, he thought, now generally admitted that the key of the position lay in the capability of the heart to carry on its work in its handicapped condition.

He usually prescribed a mixture containing ammonia and spirit of nitrous ether, or ammonia and ether itself, and his use of drugs generally ended there till after the crisis had occurred; occasionally he had employed quinine and strychnine. Even where the temperature was high, antipyretic drugs were worse than useless, on account of their depressant action on the heart: a much better means of checking or reducing a dangerously high degree of pyrexia was the application of cold to the surface, either by the icebag, the cold wet pack, or, in extreme cases, the cold bath. He believed very strongly in the benefit of the hydro-therapeutic method of treatment, especially in cases where a considerable degree of pyrexia, say 103 degrees or over, was associated with delirium. Illustrative cases of the value of

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treatment by the cold bath were cited. As regards the icebag, it had been claimed that it checked the inflammatory process in the lung, but he believed that it acted mainly, if not entirely, as a local refrigerator.

He was not in favour of the use of digitalis, as he thought it was often responsible for the nausea or vomiting, which prevented the patient from taking food, and that it therefore acted as a depressant.

For the distressing stitch-like pleuritic pain accompanying pneumonia, nothing was so effective as the application of two or three leeches, which might be followed by either hot or cold applications, according to circumstances.

He agreed with Sir William Gairdner that opium was a drug to be avoided in the treatment of pneumonia: he could not remember ever to have prescribed its use in any case, and indeed in all affections of the lungs (hæmoptysis excepted) he was shy of using it.

He had never used hypodermic saline solutions. Theoretically, the inhalation of oxygen ought to do good, but he had never seen any permanently good result from it: possibly the want of favourable result was due to its use being confined to the very worst cases, and as a last resort.

He summed up his views in the following propositions :—

1. No routine drug treatment is of any practical value.

2. Antipyretic drugs and all depressing lines of treatment are especially to be avoided. This includes nauseating drugs, such as tartaremetic and even digitalis; the latter depresses indirectly, because it causes impairment of appetite and nausea (if not actual vomiting), and so interferes with nutrition, and this again leads to heart failure.

3. A supporting and—in the widest sense—stimulating line of treatment will generally be attended by the best results. Alcohol should not, however, be prescribed in a routine way—when it is clearly required by the state of the pulse (especially), the temperature, and the tongue, it is invaluable, and the quantity given should be in proportion to the intensity of the conditions calling for its use. Patients with unimpaired constitutions, and especially the young, generally need none, and are better without it.

4. For relief of the pain in the side, nothing is so good as leeching.

5. In presence of high temperature, refrigeration to the surface by the icebag locally or by cold water generally is desirable; the latter is specially indicated, and should be applied vigorously if delirium is a complication.

6. In the case of vigorous subjects, where cyanosis is

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present, and there is obvious engorgement of the right heart, general blood-letting may with propriety be practised.

Dr Westland remarked that there was perhaps at the present time a tendency to depreciate unduly the views upon treatment of the distinguished physicians of the earlier half of the last century, and reminded the Society that their works showed them to be men with marked powers of observation and original thought. He was inclined to think that part at least of the change of views in the treatment of pneumonia was due to changes in the type and the acuteness of the disease. In his earlier life, working among a large body of navvies, he had seen many cases of pneumonia of the severely sthenic type described by Sir Thomas Watson, such as had never presented themselves in later life when engaged in good class practice; he thought it not unlikely that these earlier cases represented the more common form before the middle of last century, and that the heroic blood-letting recommended by Sir Thomas Watson was a useful and proper treatment. He referred to a remark of Graves that acute inflammatory diseases required two distinct forms of treatment at different stages, and considered it an error to overlook the earlier stage when so-called antiphlogistic treatment was indicated. As the most important general principle of treatment of pneumonia in the present day, he suggested physiological rest, to be obtained by abstinence from conversation and physical examination beyond what is necessary, by the enforcement of quiet, and by the promotion of comfort by morphia to the extent demanded by the existence of pain, cough, or restlessness. He pointed out the danger of over-feeding, with resultant discomfort of digestion and pressure on the breathing space, urging that the disease was of comparatively short duration, and that recent experience in the treatment of enteric fever has shown that at least no injury resulted from great limitation of food for even two or three weeks. In regard to the inhalation of pure oxygen, his experience was that the advantageous results obtained were very temporary and evanescent.

Dr Walker stated that he had seen a number of cases of pneumonia among the men employed in building the new bridge over the Thames at Putney, near London, who were exposed to much hardship, especially in winter, and observed the same sthenic type as had been noted by Dr Westland. The attacks were of a very virulent character, and, owing to the intemperate life of many of the men, were accompanied by delirium even at the early stages. He felt the need of antiphlogistic treatment in such cases, though it was not in favour with the teachers in Edinburgh where he studied. He found

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much benefit from almost emetic doses of ipecacuanha, and the diligent use of cold packs, by which he invariably got the temperature reduced, not only temporarily, but permanently. It was quite common to get a temperature of 104° F., and occasionally over 105° F. By the free use of ammonia he was generally able to combat the after asthenia, which is so often found in those who are alcoholic in habits. The use of digitalis seemed to him indicated when the pulse was rapid and irregular. Oxygen had not given much permanent relief in his experience.

Dr John Gordon said it was never safe to dogmatise in cases of pneumonia. The disease was so varied in its character, that every case had to be considered, and treated along its own lines. Often unexpected results occurred: some cases, which from the beginning would have led one to expect a fatal termination, gratified the physician by complete recovery. He recently had under his care a man of 78 years who was markedly alcoholic, a chloral drinker, and a victim to opium; he developed a pneumonia of the left lung. At the crisis of the disease, while his nurse was absent from the bedroom, he rose, partially dressed himself, and went into the garden for a walk; he did not seem to be at all the worse, and, in spite of his vicious habits, made an excellent recovery. On the other hand, cases which seemed to promise recovery, developed at some stage of the disease grave conditions, septic or otherwise, which led on to a fatal termination. He had employed oxygen in a considerable number of cases, and, on the whole, he was distinctly disappointed with its action. He thought that occasionally the cough was aggravated by its exhibition; he now trusted to the oxygen which was supplied by the atmosphere, when the room was well ventilated by open windows, etc. With reference to the giving of opium or morphia, he had never seen any ill-effects when a small dose was given, especially in the earlier stages of the disease. In cases with a hacking, troublesome cough, when the opium or morphia was guarded with small doses of belladonna or atropine, the action was distinctly beneficial, and benefit might also be got by its removing the sharp edge of nervous alarm in some cases. One, however, would never think of giving opium at all where there was the slightest evidence of failing respiration. He deprecated a routine treatment of all cases by digitalis; not infrequently it caused a gastric upset, which prevented the patient from taking and assimilating a due quantity of nourishment; no one could question its value where the heart was weak, and it was urgently and steadily required where any evidence of cardiac failure was present. Strychnine was a most reliable and valuable agent;

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its stimulation of the mechanism of respiration was fraught with benefit. In the face of a high temperature he placed considerable reliance on quinine as an antipyretic. One must remember that the trend of modern thought was to class pneumonia as an acute infectious disease, and that many of the symptoms resulted from the liberation of the ptomaines of the pneumococci. It was possible that quinine, by its power of retarding metabolism, and hindering the migration of corpuscular elements, might neutralise the toxic principles evolved during the progress of the disease. He had no experience of treatment by serum. In the cases in which he had tried saline solutions satisfactory results had not followed, but these cases were too few to warrant any definite deduction from them.

Forfarshire Medical Association

THIS Society met in the University College, Dundee, on Thursday, 6th February, at 8.30 P.M.—Professor MacEwan, President, in the chair.

The President showed a girl on whom he had performed astragalectomy for neglected talipes equinus with good results. The condition before treatment was shown by lantern slides.

The President also discussed in detail the various operations which had been performed for extroversion of the bladder, and showed lantern slides from photos taken before and after operation of a case he had under his care. This case he had treated with lateral flaps, with the result that the upper opening formed above the flaps was practically closed. The bladder now had an anterior wall, and the urine was escaping through an opening at the lower part.

Professor MacEwan also showed a cathcartine cast of the extroversion in this case.

Professor Stalker then gave notes of two cases showing peculiar mental symptoms, sudden onset, loss of memory, coma, gradual improvement and recovery, with absolute inability to recall anything since onset of attack. The second case was similar, but the peculiar behaviour was more marked. He was inclined to the view that these and similar cases he had seen were cases of toxæmia. There was in neither of these cases any history of accident nor any albuminuria.

Dr Urquhart, Perth, referred to the medico-legal aspect of such cases, and mentioned two cases of imposture resembling these. He was of opinion one of Dr Stalker's cases might have been due to premature senility, and gave an account of a case of senility which resulted in melancholia.

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Dr Urquhart read a paper on status epilepticus which appears on p. 301.

Dr Buist mentioned a case of status epilepticus he had seen, and considered the bowel to be all important in insanity.

Dr Kerr referred to a case of his own resembling Dr Stalker's cases of peculiar behaviour and loss of memory.

Professor Stalker, in discussing Dr Urquhart's paper, dwelt on the importance of the hereditary element in insanity, pointing out that as a general rule insanity occurred in highly nervous, over-developed families.

Dr Urquhart replied.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

X-RAYS IN MEDICAL DIAGNOSIS

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THE employment of X-rays as an aid to diagnosis is much less common amongst physicians than it is with surgeons, and the difference does not seem to be due to any greater accuracy either in the methods used or the results achieved by the former. It is rather because of the greater technical difficulties which are encountered in examining the viscera contained in the body cavities, and the need of considerable experience if the appearances which are presented are to be rightly interpreted. On this account the physician must either possess an installation of his own and qualify himself in its use, as is commonly done in America, or else he must secure the co-operation of a colleague who has made a special study of the subject, and not trust to the assistance of a mere technician, who can seldom be of much service in such cases.

Hitherto the most valuable results from the physician's standpoint have been obtained in dealing with the thoracic viscera; the brain, owing to its situation within a bony cavity, does not lend itself readily to examination by the X-rays, although in a few instances it may be possible to localise a large hæmorrhage or cerebral tumour by their help; whilst the skiagraphy of the abdominal viscera is rendered difficult, partly because of the nature and arrangement of these organs, and still more because of the thickness of the muscular masses that are present in the lumbar regions.

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In the thorax the problem is much simplified alike by the fact that the healthy lung is very transparent to the rays, particularly so when it is fully expanded, and also by the comparative thinness of the muscular layer which clothes it. In certain diseases of the *lungs* it is found that their transparency is remarkably diminished. Thus in lobar pneumonia the affected part appears as a dark area which is sharply delimited at the edge of the consolidated tissue, and in some abnormal cases this shadow has been clearly visible for a considerable time before any other physical sign of diagnostic importance appeared. Variot and Chicotot (1) have made the important observation that in young children lobar pneumonia invariably shows this diminution of transparency of the lung to X-rays, whilst broncho-pneumonia, even where extensive, in many instances scarcely interferes with their passage.

Béclère (2) points out that sclerosis of the lung is characterised by three radioscopic signs: firstly, that the affected tissue is rendered somewhat less transparent; secondly, that the lung occupies a smaller space, and as a result the shadow of the diaphragm is encountered at a higher level than normal; and thirdly, that its expansion during respiration is restricted. It has been noted from an early epoch in the history of skiagraphy that in phthisis the affected part of the lung casts a fairly dense shadow. In most cases, however, the presence of the disease can be discovered at an earlier period by other methods, and radioscopy is only of value where the lesion is suspected to lie so deeply as to be beyond the reach of percussion, or where owing to the possibility of a bilateral apical phthisis further information regarding the two apices is desirable.

At one time it was hoped that the X-rays might assist materially in the detection and localisation of cavities deeply situated in the lung, and so facilitate surgical interference in appropriate cases. Unfortunately, in many such instances the cavities contain secretion, and are then practically indistinguishable from patches of consolidation. Holzknecht (3) finds that in those cases where there is a cavity which contains air, it may present the appearance of a comparatively bright disc surrounded by a ring of shadow, which is caused by the consolidated tissue which envelopes it. In order, however, that this appearance may be developed the cavity requires to have attained a considerable size.

Tumours of the lung, due to whatever cause, are all associated with marked diminution in the transparency of its tissue, and many cases have recently been recorded where their presence has been rendered certain by the use of the Röntgen rays; it is important, however, in such cases to recollect that all that the

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rays can determine is the presence of a shadow, and in some cases also a corresponding interference with the expansion of the lung, and that the interpretation of the shadow must largely depend on the conclusions which can be drawn from other methods of investigation.

In diseases of the *pleura* the X-rays are often of considerable help. Pleural effusion invariably interferes with the passage of the rays, but, as Achard (4) and others have pointed out, one cannot by their help discriminate between effusions consisting of serum, of pus, or of blood. In certain cases of encysted pleurisy, and particularly in that form in which fluid accumulates between the lobes of the lung, where the other physical signs are ambiguous and the symptoms suggest a pulmonary tuberculosis, the fact that the shadow occupies a zone bounded above and below by comparatively healthy and therefore transparent lung, not only enables the examiner to exclude phthisis, but gives the needed indication for timely operative interference (5).

The action and position of the *diaphragm* and its participation in various diseases can be better studied by means of radioscopy than by any other clinical method. Levy-Dorn (6) and others have, however, pointed out that owing to its convex form its shadow varies considerably with the situation of the tube from which the radiations proceed, and that if care be not taken to have the latter on the level of its upper tangential plane, the results of examination may be very erroneously interpreted.

Amongst the numerous observations which have been made on the action of the diaphragm in diseases of the lung and pleura, two may be noted here as of unusual interest. Kienböck (7) in the spring of 1898 observed, in a case of pyopneumothorax, that the upper border of the shadow which marked the surface of the effusion rose to a higher level during inspiration and fell again during expiration. This he explained on the hypothesis that the corresponding half of the diaphragm was paralysed through the inflammatory process, so that as the other lung filled with air and its portion of the diaphragm was depressed the increased abdominal pressure forced up the diaphragm of the diseased side to a higher level. Similar cases have been observed since this one was described. The other observation to which reference may be made was recorded by Levy-Dorn (8), who was able to examine the behaviour of the diaphragm in a case of spasmodic asthma. He found that one half of the diaphragm remained fixed in the position of full inspiration during almost the whole period of the attack, whilst the other half passed with difficulty and by jerks to its expiratory position during the patient's efforts to empty the

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lung of air, but with each inspiration it readily resumed its depressed situation.

A good deal of attention has recently been paid to the displacements of the *mediastinum.* In addition to permanent displacements due to such causes as massive pleural effusion, enlargement of the lung from tumour growth, or its retraction from disease and cicatrisation, which can be easily enough recognised without radioscopy, one is now in a position to observe numerous temporary displacements associated with the movements of respiration. Amongst these Holzknecht (9) has directed attention to an interesting condition in which the mediastinal shadow remains in its normal position whilst the patient breathes in an ordinary way, but is displaced to one side on deep inspiration although there is no indication of pulmonary disease or of pleural effusion. This displacement of course indicates a certain inequality in the distensibility of the lungs, and has been explained in two ways. Holzknecht himself suggested that in such cases one bronchus was sufficiently obstructed to retard the entrance of air into that lung. Hence it lagged behind the other in expanding, and the mediastinum was drawn to the side occupied by the less permeable lung. Béclère, on the contrary, inclines to the opinion that in such cases one may have to do with a more or less pronounced sclerosis of one lung which in consequence cannot expand so fully as the other, and therefore drags the mediastinal structures towards itself.

In the event of Holzknecht's hypothesis being the correct one, the mediastinal shadow would gradually return to its normal position if the patient fixed his chest in the position of a full inspiration, for under these circumstances air would enter the affected lung by degrees and the balance would ultimately be restored; but if Béclère's view were correct the displacement would continue unchanged so long as the chest remained expanded.

Aneurism of the aorta can often be detected at an early stage by a skiagraphic examination, and in some cases the first suggestion that such a disease is present may be thus obtained. Professor Magee Finny (10) has recently recorded a very instructive case of this nature, where the patient presented no objective signs, and the only thing which could have excited any suspicion of aneurism was the presence of a vague pain in the left side of the chest. The radiographic examination revealed a large pulsating aneurism of the descending aorta. The presence of pulsation, as Gebauer (11) has recently emphasised, must not be made too much of in the differential diagnosis of aneurism from mediastinal tumour, but distinct expansile pulsation in the line

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of the aorta when it is present is a very strong point in favour of the abnormal shadow being of an aneurismal origin.

In some cases, but by no means in all, enlargement of the *mediastinal lymphatic glands* can be identified by radioscopy. The difficulty is due to their small size and to their situation, the shadow which they cause being obscured by the deeper shadows of the heart and sternum. When they pass beyond these limits they can usually be recognised, and Béclère (2), who has paid much attention to the subject, thus sums up his conclusions:—When the shadow of the hypertrophied glands passes on one or both sides beyond the central shadow of the mediastinum above the heart, it is at times most difficult not to confuse it, in a photographic print, with that which indicates a dilatation or lengthening of the aortic arch. The chief distinction consists in the irregular and chain-like or polycyclic disposition of the shadow. But if the screen be substituted for the plate one can frequently observe, in addition, a contrast between the fixity of the glandular shadow and the rhythmic expansions of that due to the aorta.

The *œsophagus* is of course invisible on ordinary examination, but its course can easily be observed by passing a metallic sound whose progress is followed on a florescent screen. Holzknecht (12) has recently suggested an alternative method, which is much less unpleasant for the patient. He administers a large capsule of bismuth subnitrate; this casts a fairly dark shadow on the screen, and its passage down the œsophagus can be easily studied. In some cases of stenosis its advance is retarded at the affected point, and in other diseases of the œsophagus irregularities in the rate of its propulsion may be noted. When there is a marked stricture it is better to give the bismuth suspended in a little fluid. This can be seen to collect above the constriction and then to pass gradually through it in its progress to the stomach.

In the abdomen the *stomach* may be examined by the same methods as are applicable to the œsophagus, but the results which have hitherto been secured are of no great clinical importance.

At present interest seems to centre in the question of the detection of *Renal and Ureteral calculi*, and great advances have been made in this direction.

The most important recent work on this subject has been carried out by Leonard (13), who has published a very valuable paper containing a record of his results. He has examined 136 cases in which the symptoms complained of suggested the presence of calculi in the kidney or ureter. In 36 of these the

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skiagraph showed a calculus, and operation confirmed the results of the X-ray examination. The operation was rendered easier by the approximate size and situation of the calculus being previously known. In one case no stone was seen in the photograph, though it was discovered in the course of a subsequent operation, but Leonard had reason to believe that the photographic plate was faulty, and that the failure was due to this avoidable cause and not to any difficulty arising from the nature of the calculus. In the remaining 99 cases in which the result of the skiagraph was negative no calculus was found at the operation. He therefore considers that he can confidently exclude the existence of a calculus when a negative result is obtained in a competently conducted X-ray examination.

Albers Schönberg (14) and Drs C. and A. Llaberia (15) also record satisfactory results in the detection of such calculi, the latter having put on record their experience of thirty-seven cases. It would thus appear that the evidence which has been collected is amply sufficient to justify the opinion which Leonard has expressed.

The detection of *biliary calculi* has also been attempted but the reports have not been very satisfactory, although Beck (16) has been successful in some cases. He lays considerable emphasis on the choice of a tube of appropriate penetrative power, and on the position of the patient during the exposure.

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Several very important atlases have recently been published; amongst these may be mentioned the magnificent work of v. Ziemssen and Rieder, "Die Röntgographie in der inneren Medizin" and, on a much smaller scale, Weinberger's "Atlas der Radiographie der Brustorgane."

Those who wish to obtain fuller information than could be given in the foregoing abstract, but who have not time to consult the larger works, will find a very clear summary of our present knowledge of the radioscopy of the thorax in two small volumes by Béclère which are published by Baillière et fils in their series of "Les Actualités Médicales."

A SUPPOSED VARIETY OF SMALLPOX. IS THERE A THIRD DISEASE?

AT a time when smallpox is more than usually prevalent in this country, its accurate diagnosis becomes a question of very great importance. Two American writers have recently reported outbreaks of a disease which apparently closely resembles smallpox, and yet is, in their opinion, not so. We are confronted then with what we might call a "Third Disease," that is to say, an infection which is neither smallpox nor varicella. Such anomalous outbreaks have been reported before; for instance, a curious disease occurred among the Lascar sailors on a ship at Glasgow some years ago, and puzzled the health authorities of that city.

Brainerd (*Medical Age*, Jan. 1902) describes a small epidemic of 79 cases occurring in Alma, Michigan. The initial stage of the disease resembles that of smallpox, and is accompanied by fever, backache and nausea in the majority of the cases. As a rule the eruption appears on the fourth day, but marked variations in this feature of the illness were noted. The eruption is first macular, and then becomes papular and shotty. So far, therefore, we see nothing to distinguish it from true smallpox. But in this new infection only a certain number of cases become vesicular, and the vesicles if formed never become either umbilicated or truly pustular. The vesicles are in this form of pox, unicellular. The scabs are small, and separate early. Practically no scars are left. Brainerd states that four of his patients had smallpox previously, and that many had been successfully vaccinated within the year. There was practically no mortality.

Brummall (*American Medicine*, Feb. 1st, 1902) gives his experience of some 300 cases of what seems to be the same condition, which indeed we gather from his paper is very prevalent in America at present. In his cases many persons suffered from preliminary erythematous eruptions. The regular

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eruption, according to this observer, appears usually on the second day. The papules turn rapidly into vesicles, and these pass into a pustular stage and finally dry up, usually without bursting, into scabs. The constitutional symptoms were mild throughout, the fever slight, and only one case terminated fatally. Brummall has not noted the condition of his patients relatively to vaccination, but he estimates the vaccinated population as being not more than 50 per cent. of the whole, and quotes Happel (*Journal of American Medical Association*, Sept. 1900) as stating that persons vaccinated only three weeks before may take the disease. He adds that many take the infection a second time after a short interval.

Whether this disease is ultimately proved to be smallpox or not, we have a new terror added to the difficulties of diagnosis. The definite period of invasion distinguishes the infection from varicella. Except for the fact that vaccination and previous smallpox do not protect, there is little or nothing in the clinical symptoms of this disease to distinguish it from varioloid. In modified smallpox we expect, and we see frequently, all sorts of anomalous symptoms. But here unvaccinated persons do not appear to suffer more than the vaccinated, which is not consistent with the theory that the illness is varioloid. Brummall asserts, moreover, that the incubation period is longer, but in this he is contradicted by Brainerd, in whose cases the incubative period was that of smallpox, twelve days. It has been suggested in America that the previous vaccination of preceding generations has caused a hereditary immunity, but Brummall's estimate of the vaccinated population of the States, if correct, makes this theory untenable. In the meantime it is safer to conclude with Brainerd "that the disease is in reality a modified form of smallpox, more modified than varioloid, and modified by some agency other than man." We may note that the last-mentioned writer calls the condition by the name of the town in which he practices, "Alma-pox," a most excellent name for such a benign infection. C. B. K.

SURGERY

DISINFECTION OF THE HANDS

By CHARLES W. CATHCART, F.R.C.S.,
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IT is a somewhat humiliating reflection, and yet a salutary one, that the enemies which the surgeon has most to dread in his endeavour to keep his wounds aseptic are just his own hands and those of his assistant.

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Halstead (1) was among the first to throw doubt on the possibility of absolutely sterilizing the hands. Lockwood (2) afterwards showed that pieces cut from the skin which had been carefully prepared for operation by washing and soaking with strong antiseptics were capable of infecting gelatine culture tubes with numerous organisms. He pointed out also (3) that the contents of sebaceous glands included all sorts of micro-organisms, and that the sweat as it came to the surface seemed to bring organisms along with it. In 1899, Freeman (4) published the results obtained after disinfecting his hands by various methods. In each case he removed the antiseptics from his fingers before inoculating the nutrient gelatine. The finger to be tested was dipped into a bottle containing melted gelatine, and kept there for about ten minutes, being freely moved about and rubbed against the sides of the bottle all the time. The details of four important experiments recorded by him are as follows:—

Experiment I.—Hands scrubbed in warm soap and water, nails cleaned, hands re-scraped, washed and soaked in alcohol and then in bichloride, rinsed in boiled water, finger dipped in ammonium sulphide, and then brought into gelatine. About thirty cultures were obtained.

Experiment II.—The hand was then wrapped in sterilized towels and thoroughly perspired for some minutes in a Beck's hot-air oven. Another immersion of the same finger in gelatine furnished about sixty cultures, just double the original quantity, although, the same finger being used, the number should theoretically have been less.

Experiment III.—The member was then re-scraped and re-sterilized, and the finger again placed in gelatine. But fifteen cultures were obtained.

Experiment IV.—The sweating process was again gone through with, following which but two cultures appeared in the nutrient medium.

In this way he tested "several processes of sterilizing the hands which were in common use—the chloride of lime method, the mustard method, and the permanganate of potassium and oxalic acid method. With the first two I obtained so many cultures that I could not count them. . . . With the permanganate of potassium method between fifty and seventy-five cultures grew; hence this process, according to my experience, stood next in efficiency to alcohol and bichloride of mercury."

Other experimenters have made cultures from the skin in many different ways, but it is unnecessary to say more at present with regard to them except this, that they all bear

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witness to the great difficulty of completely freeing the skin of the hands from micro-organisms. As might have been expected, the result of doubt having been cast upon the value of the former methods of cleansing the hands has caused numerous inquiries, and strenuous efforts to be made in order, if possible, to eliminate from the treatment of wounds the risk of contamination from the surgeon's hands. A formidable array of papers have appeared on the subject, especially in Germany, besides several treatises, some of which almost deserve the title of books. One of these, published at the end of last year, is by Shaeffer (5), and is a very valuable contribution to the subject, as it gives evidence of accurate reasoning and careful experiment. From this, from Hægler's treatise (6), and from papers, the chief of which will be mentioned in due course, the present review of the subject of hand disinfection has been drawn up.

In order to concentrate opinion upon some of the more important practical points, we may arrange our remarks under the head of definite questions.

1. *Is it possible to render the hands absolutely sterile?*—Although some have claimed that they have been able to do so, others, in testing their results, have shown that there has been a fallacy at some stage or other in the experiment, and we may take it that in the present state of our knowledge the answer to that question is "No." Of course it will be understood that the expression "absolutely sterile" is to be considered in a strictly scientific sense, while the method to be employed must be one which is available in daily practice. The reasons which enable us to understand why the difficulty is so great, are briefly that organisms may lie so deeply in the crevices and cracks in the epithelium and in the interior of sweat and sebaceous glands that their complete dislodgment cannot be ensured, while the attempt to destroy them *in situ* by powerful antiseptics injures the epithelium just as much, if not more, than it injures the organisms themselves. Hægler has devised a simple method of demonstrating the difficulty of removing fine particles from the surface of the hands. The hands are rubbed over with lamp-black or Indian ink suspended in water. After the ink has dried in for ten or fifteen minutes, the hands are washed and scrubbed. The removal, however, of all the marks visible to the naked eye will be found surprisingly and instructively difficult, while a simple lens and then the microscope will reveal fine particles in the deeper cracks and crevices of the epithelium where the cleansing process had apparently been complete. The experiment is as important as it is simple. It impresses us with the difficulty, if not impossibility, of removing all the fine

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particles lodged in the crevices of the epithelium by the method of hand-washing available before an operation, although they may be retained so firmly in their places that they do not become free during the operation—or only to a very limited extent; while it brings home to us the immense importance of avoiding contamination of our fingers by pathogenic organisms.

In spite of the discouraging answer to the first question, we must pass to consider—

2. *Is it possible to render the hands so free from organisms during an operation that the danger of wound contamination is exceedingly small?*—From numerous records of clinical experience, as well as from Shaeffer's experiments, the answer to this question is, "*Yes, if the necessary precautions are taken.*" Besides Lister's and Watson Cheyne's well-known admirable results with soap and water and 1 to 20 carbolic acid, Kelly's permanganate of potash method has been found most satisfactory, although Freeman showed it to be distinctly faulty by his experiments. By the chloride of lime method which Freeman found to be much inferior to Kelly's, Stimson (7) reported that he had had no suppuration for two years. Bull and Coley (8) in hernia operations report 95 per cent. of primary union using green soap, hot water, alcohol, and perchloride of mercury. Lockwood's percentage in non-strangulated hernia (9) was 96 per cent. of primary union in his last series of fifty cases, and he considers the "Operation of radical cure to be one of the severest tests of aseptic surgery." Hahn (10) states that he has had no wound infection of any kind in 136 consecutive operation cases by the method which he describes of soap and water scrubbing, followed by 1-1000 of sublimate alcohol, and then by 1-2 per 1000 of sublimate in water. Lastly, Kocher (11) in 1899 reported that out of 255 operations he had had only one case of suppuration due to wound infection at the operation. His method of hand-cleansing was practically that of Ahlfeld, and although gloves were used, he states that he had had equally good results before they had been introduced.

As to the relative merits of various methods, Shaeffer decides in favour of Ahlfeld's hot-water-alcohol method as the one which, when efficiently carried out, gives us the greatest confidence in answering this second question in the affirmative. Mikulicz's spirit-soap method ranks, in his opinion, next to it, and most of the others a long way behind.

The chief virtue of alcohol is shown by Shaeffer to consist in its power of removing organisms clinging to the surface of the skin. He tested this both with the "day's hand," and with hands artificially infected with a non-pathogenic yellow air-germ of about the same resistance as the staphylococcus. After

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scrubbing with soap and water with much greater vigour than would have been done at an operation, he found that he could always obtain a large number of colonies in plate cultures from the fingers. He then scrubbed his hands twice or thrice in 96 per cent. of spirit (brushes and spirit changed each time) and found that the number of colonies was very greatly reduced or that they were absent. The spirit which had been used for scrubbing the hands was filtered, and numerous colonies were obtained from the filter paper. This experiment showed that the spirit had loosened and removed great numbers of germs which the simple mechanical scrubbing process had left behind, although it had not killed them. The antiseptic property of alcohol he does not, however, consider to be of much importance. Another property to which some have attributed the value of spirit to the surgeon is that of shrinking the surface and holding down the organisms which it does not get rid of. Although it may be difficult to explain why any one agent should, at the same time, loosen epithelium and cause it to contract, Shaeffer's experiments, which we have not space to detail, seem to prove that spirit actually fulfils this double function. Possibly it may act on the cement material in one way and on the cells themselves in another.

Upon the action of spirit in setting free the organisms from the skin depend several of the details of *the hot-water-alcohol method, as Shaeffer recommends it.*

For an important operation the hands are to be washed in (not over) a strong solution of green soap in water as hot as can be borne. All the scrubbing is to be done *in* the water in order that both hands may benefit by the soaking, which encourages perspiration and loosens epithelium. The water should be changed several times, and fine sand, powdered pumice stone, or marble dust may with advantage be used, as well as a nail brush, which is imperative. This stage of the process should last ten minutes. The nails having been well cleaned all round with a nail cleaner, the hands may be firmly rubbed with a dry sterile towel, although this latter detail is not insisted upon. The hands are then to be scrubbed again *in* two separate quantities of spirit with a fresh nail brush. This spirit scrubbing should take three and preferably five minutes. Finally, the hands are to be bathed for a short time in a reliably sterile fluid in order to wash away any remaining organisms which have been loosened although not removed. For this purpose 1-1000 corrosive sublimate solution is recommended, although not for its antiseptic effects so much as for its being a reliably sterile fluid.

Mikulicz's spirit-soap method (12).—The agent is the spirit-

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soap of the German Pharmacopœia, 3rd ed., p. 291. On analysis it contains 10·2 per cent. of potash soap, 0·8 per cent. of free oil, 1·0 per cent. of glycerine, 43 per cent. of alcohol, and 45 per cent. of water. It is, in fact, an over-fatted potash soap dissolved in nearly equal parts of spirit and water. The visible dirt is first rubbed off with gauze soaked in the spirit-soap; next the nails are cleaned with a Braatz nail cleaner, and the hands are then scrubbed for five minutes with the spirit-soap and a nail brush. A thin film of the soap is left on the hands, which makes them slippery as soon as they become moist. This disadvantage is diminished by bathing them in sublimate lotion and rubbing them with dry gauze, and is removed by wearing thread gloves. Mikulicz claims for this method that it saves time, that it does not irritate the skin, and that besides being cheaper than the hot-water-alcohol method, it produces a more loosening disinfectant effect upon the hands. The last of these assertions as to disinfection is, of course, the most important, and it has been carefully tested by Shaeffer. Using hands artificially infected with the yellow air-germ, and giving the spirit-soap method the benefit of about double the amount of scrubbing that Mikulicz prescribes, Shaeffer found that he was able to obtain from six to eight times as many colonies after the spirit-soap method as he could after using the hot-water-alcohol method, the conditions being otherwise the same. The latter method he therefore considers to be distinctly the better of the two.

Of the other methods tested by Shaeffer we may mention the following:—

(1) *Sublimate disinfection, i.e.* thrice changed hot water, soap and fine sand, afterwards from five to ten minutes in 1-1000 sublimate solution; results much inferior to those obtained with the spirit-soap, although the sublimate was purposely not neutralised before the inoculations were made from the hands.

(2) *Schleich's ground marble and soap method, i.e.* purely mechanical.—Tested in the same way, and also with more than the prescribed amount of scrubbing, this method yielded an enormous number of colonies. This only confirmed the previous criticisms of this method by Paul and Sarwey, Krönig and Blumberg, and Schenk and Zaufal. Shaeffer explains the unduly favourable view which Schleich took of this method by showing that his laboratory experiments were not nearly severe enough in their tests, and that the good clinical results reported after its use were due to Schleich's plan of operating with a dry, polished hand, a plan which becomes highly dangerous as soon as the hand gets moistened in the wound.

(3) *Disinfection with mercurial æthylendiamin solution, 4 per cent.*—This, although more expensive than 1-1000 solution

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of corrosive sublimate, Shaeffer does not find any to be more efficient.

(4) *The lysol method.*—Shaeffer used a nail brush and a hot 1¾ per cent. solution of lysol, thrice changed, for fifteen minutes, then bathed his hands for four minutes with sterilized water, which only partially removes the carbolic in the lysol. Although the effect upon the hands was more severe than could be borne in actual practice, the result was no better than that obtained by disinfection with corrosive sublimate.

Lysoform and chinosol, which were also tested, were not found to be as good as corrosive sublimate.

We have confidence in accepting Shaeffer's conclusions, not only from the apparent intrinsic merits of his work, but also because so many others have realised the value of alcohol as an agent for cleansing the hands, although they do not all seem to have grasped its real mode of action, and therefore have not employed it in the most effective way. Apart from the relative merits of Ahlfeld's and Mikulicz's methods in removing organisms from the hands, there are one or two other points which are worth considering. Mikulicz claims that spirit-soap is cheaper than alcohol, and gives 38 pf. per kilogram (litre) as the price of spirit-soap and 45 pf. per kilogram as that of spirit. Without entering into the question as it affects Continental surgeons, we find that this advantage in price does not apparently hold good for spirit-soap in Great Britain. On inquiry at the head-quarters of one of our leading Edinburgh Chemists, the writer was told that spirit-soap made in this country according to the German Pharmacopœia would be much dearer than methylated spirit; and that even if cheaper materials were used than those laid down in the German Pharmacopœia, the advantage as to price would still be on the side of the spirit. The wholesale price of methylated spirit at present is 2s. 9d. per gallon (imperial). Bought in small quantities from a chemist, it would cost a medical man about 6d. per imperial pint. For an important operation probably a quart would be required for each pair of hands, while for a minor operation a pint would suffice.[1] The smell of the 10 per cent. of wood naptha used to "denature" methylated spirit is comparatively slight, and soon passes off the hands, while it probably increases the cleansing effect of the spirit. Even the odour of the $\frac{1}{250}$ part of paraffin oil added to the ordinary commercial methylated spirit may be neglected when the other is not available. Shaeffer in his experiments used a cheap

[1] In hospitals with large laboratories the cost both of spirit and of spirit-soap would be greatly reduced if Government permission were obtained to re-distil the spirit. After being used for the hands, the spirit is available for burning purposes.

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denatured spirit of 96 per cent. Our methylated spirit is issued at 91 per cent. (64 o.p.) and 88½ per cent. (61 o.p.), but this difference seems to be immaterial.

As to other points of difference between the two methods, the slipperiness of the hands left by the spirit-soap is a distinct disadvantage in operating, unless gloves are worn, which is not the question at present. If the slipperiness were removed by further washing and dry rubbing, probably the value of the spirit-soap method would be diminished, as many believe that the layer of soap left upon the hands is of service in keeping organisms embedded in the epithelium from escaping into the wound. The gain of ten or twelve minutes at the beginning of an operation, and without heating the hands, would therefore not help the spirit-soap method much in its competition with the hot-water-alcohol method. Lastly, methylated spirit can be obtained anywhere, while spirit-soap would have to be specially made up.

Before passing to the vexed question of gloves, there are one or two points as to the appliances used in washing the hands which require a brief notice.

Should running water only or hand basins be used?—Many consider that the water ought to be constantly running in order to carry away the organisms set free from the skin. Shaeffer, while admitting this advantage, prefers a hand basin with the water several times changed. In this way we obtain the benefit of a strong solution of soap, which is impossible with running water, and still more of a thorough soaking when the plan of washing all the time *in* and *not over* the basin is carried out. It is needless to say which method is most convenient in general practice. Doubtful hand-basins, if scrubbed out with black soap and scalded with boiling water, will probably be rendered safe for all practical purposes, although some think that they should be sterilized by steam.

Nail brushes should always be sterilized, and separate ones used for the water and for the spirit scrubbings. Boiling for eight minutes in water is considered sufficient, or they may be sterilized with the dressings by steam, which does not soften them so much as boiling does, or kept constantly soaking in 1-1000 corrosive sublimate or 5 per cent. carbolic acid. Good serviceable nail brushes can be bought for 3d. or 4d. each. The fine sand or pumice stone used can easily be boiled, and then kept dry or soaking in an antiseptic fluid.

Should gloves be used during aseptic operations?—A great deal has been written about them, and we shall try briefly to indicate what seems to be their value. Three different kinds have been recommended: rubber gloves by Halstead, thread gloves by

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Mikulicz, and leather gloves by Wölfer. Rubber gloves are a perfect protection so long as they remain intact, but when made so thin as not to hinder greatly the sense of touch, they are very apt to be torn in pushing in needles, etc. Since they encourage sweating, the fluid which accumulates within them towards the end of a long operation will be charged with any organisms that the hand may have retained, and this fluid escaping through some small puncture would be highly dangerous. They are, moreover, much more expensive than either leather or thread gloves, and not so durable, nor so easy to work with. Thread gloves seem certainly to act by delaying the passage into the wound of any organisms which the hand may contain. When they become damp with blood and perspiration, however, the fluid which can be squeezed out of them carries such organisms with it, and constitutes a danger. Such gloves therefore require to be changed several times in the course of a long operation. For such work as of lifting up slippery viscera, in abdominal operations, or for grasping the larger class of instruments, thread gloves are considered to be of advantage, but for fine dissection and where delicate touch is wanted they are a decided disadvantage if not an absolute hindrance. Kocher considers that the chief value of thread gloves is in tying ligatures to prevent the silk (which he uses) from picking out organisms from the deeper layers of the skin, as the knot being tightened. Much the same may be said of leather gloves; only that they are better filters, and require to be sterilized by soaking in antiseptics, instead of by heat, which shrivels them up. Shaeffer considers that the advantage of gloves during an operation are counterbalanced by their disadvantages in prolonging the operation, in increasing the risks of some slip in the manual work, and in exposing the tissues to greater risk of bruising, in addition to the special risks of rubber gloves already referred to.

Frequent rinsing of the hands during the course of the operation would probably serve the same purpose as changing thread gloves and takes up less time; while one finger in each hand might be protected by a firm rubber finger-stall and made to bear the chief strain in drawing the ligatures tight.

In all that has been said about disinfection of the hands, it has been assumed that the hands were in a healthy state. It is necessary, therefore, at this stage of the discussion, to refer to the possibility of sores on the fingers. All authorities who allude to this subject are emphatic that *no method of disinfection can pretend to protect a wound against an inflamed or suppurating hand.* Lockwood (13) says: "It would be most reprehensible to operate with a suppurating sore upon the hands. I have

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recently seen a terrible disaster follow the breach of this rule." The organisms are scattered broadcast throughout the wound during the course of the operation, with the inevitable result of extensive infection at the most dangerous time, *i.e.* when the surfaces are raw. Slight cuts or grazes, if not inflamed, do not seem actually to contra-indicate a surgeon's operating, but they must be well covered up with collodion or preferably celloidin. This must be applied after the hands have been prepared, for spirit will dissolve and loosen either substance—or a *firm* finger-stall should be used; the thin stalls are so apt to give way that they constitute a danger. From the evidence furnished by experiments the probability is that most surgeons have hitherto under-estimated the danger of slight scratches on the hands and especially on the fingers. Blumberg (14) was often able to obtain numerous colonies from the slightest scratches when no development could be obtained from other parts of the hands or fingers. Shaeffer again made it a rule never to experiment upon hands on which there was the slightest visible injury or chap (*die kleinste sichtbare Verletzung oder Schrunde*).

This leads us to a most important precaution, *i.e.* the preservation of the surface of the hands. Lockwood, Hægler, and others have drawn attention to the ease with which a smooth hand may be cleansed as compared with a rough one, and every-day experience confirms their conclusions. Hence the use of very powerful antiseptics, such as Lockwood's 1-500 of biniodide in spirit, Lister's 1-500 of corrosive sublimate in 5 per cent. carbolic acid, or even 5 per cent. carbolic acid, do more harm than good by roughening the hands and leading them to crack, except for the favoured few whose hands can stand them. Even the hot-water-alcohol method, which is so relatively unirritating, damages the hands by removing the natural fat of the skin. It is therefore necessary to compensate for this by rubbing into the hands some simple preparation of lanolin or oil at bed-time and, if possible, also at the end of every operation. Hægler emphasises the need for thus caring for the hands, and considers that it should be as regular a part of the surgeon's daily routine as the winding up of his watch. In order to facilitate the cleansing of the finger-tips, *the nails should be kept as short as possible.*

But this is not all. From what has been said as to the impossibility of rendering the hands absolutely sterile, and of the trouble required to prevent them from conveying mischief during an operation, two precautions naturally suggest themselves. (1) That of keeping the hands as free from pathogenic organisms as possible throughout the day, or "hand

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prophylaxis." Many ways of assisting to fulfil this object have been suggested, such as using forceps instead of fingers in removing dressings from suppurating wounds; wearing thread gloves at ward visit; and protecting the hands with rubber gloves when opening abscesses, and such like (where fine work is seldom required); and washing off pus before it dries in, if it should touch the hands. Moreover, it is of great importance to wash the hands very thoroughly at the end of even an aseptic operation, so as to leave no culture material upon them for the benefit of any chance organisms which they might pick up during the day. (2) That of rinsing the hands frequently during the course of an operation, and touching the wound with them as little as possible, using instruments instead.

It will be seen from the preceding brief discussion of the subject that disinfection of the hands, as now understood, means trying to remove organisms *from*, rather than hoping to kill organisms *in*, the hands, and that improved methods running on this line still justify our operating with bare hands. At the same time it will have been evident that care and trouble at the operation is only one part, although a very important one, of the total number of precautions required to ensure success.

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OBSTETRICS

THE INFLUENCE OF PREGNANCY ON THE NORMAL CIRCULATORY SYSTEM

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I. Heart.

"NEVER be opinionative when you can be scientific" is a maxim of Clouston, the wisdom of which might be illustrated from many chapters of medicine, but from none more forcibly than from that which concerns us now. When in 1857 Larcher published his paper on the normal hypertrophy of the heart during pregnancy he made the humble preface that now that anatomy has been so long and so carefully studied one cannot hope to add to it any great discovery, and that he is content to throw his grain upon the heap. It has cost much labour during the succeeding forty-five years to look for that grain to see that it is not dross. The history is curious and instructive. Larcher in 1826-27 saw in the Paris Maternity at least 130 autopsies, and formed a general impression that the wall of the left ventricle was during pregnancy thickened by at least one-fourth, at most one-third, and that the muscle was firmer and brighter red. The generality and constancy of the phenomenon left no possibility of doubt, and he thought it needless to take weights or measurements. Larcher told Ménière, who used the information to explain cases of cerebral hæmorrhage, and was henceforth to be cited as an authority for the doctrine. Ducrest then measured the hearts of 100 women between twenty and thirty years, and found even his minimum greater than Bizot's measures for the normal female heart. Duroziez, oblivious of the effect of the compression through the diaphragm, demonstrated the increase in cardiac dulness. The Academy of Medicine awarded Larcher its prize. The doctrine thus become orthodox was trenchantly criticised by Gerhardt and by Loehlein, who pointed out the inclusion of hypertrophies depending on causes other than pregnancy, and defended by Angus Macdonald, who thought this contention that eclamptic cases should be excluded beside the mark as the causes leading to eclampsia could not have been active long enough to affect the question.

The scientific study of the question first became possible in 1883 with the publication of W. Mueller's "Die Massenverhaeltnisse des menschlichen Herzens," in which standard methods of weighing and measuring the heart, its walls and cavities are established. Defining the heart index as the ratio

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of heart weight to body weight, the following table gives the averages for 32 pregnant or puerperal women, and 364 of the general female population.

Body Weight in kilog.	Puerperal.		General.	
	No.	Index.	No.	Index.
30-40	3	·00523	144	·00532
-50	15	462	137	499
-60	9	441	55	457
-70	5	423	28	420
	32	456	364	499

Mueller says the heart index in the puerperal cases has a tendency to be below the normal average, from which he concludes that *at the most* the heart during pregnancy undergoes an increase that is proportional to the increase in body weight. This "at the most" is usually omitted in quoting Mueller.

The relation of auricles to ventricles is given in the next table.

Age.	Puerperal.		General.	
	No.	A/V.	No.	A/V.
-20	1 (Nephritis)	·1102	13	·1560
-30	14	·1574	46	·1645
-40	12	·1623	57	·1767
-50	5	·1703	70	·2060

From this Mueller concludes that the relation of auricle to ventricle increases with age in puerperal cases as in others, and the ratio for puerperal cases is slightly less than the general. The difference is so small that it might fall within the limits of error of observation, but it is curious that it is always in the same direction, so that there is probably a slight relative gain in the ventricles.

The ratio of the right to the left side also differs little from its value in the general population, but the differences are again

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all in the same direction. The figures, leaving out two cases of nephritis and one of pulmonary emphysema, are:—

	No.	Index R/L.
Died in pregnancy or day of labour .	8	·497
„ 1st week	9	·495
„ 2nd „	9	·470
„ 3rd „	3	·489
General female population . . .	...	·507

From this Mueller says that the left ventricle gains more than the right. His summary of the whole position is that Larcher's dogma is a gross overstatement.

Mueller's argument involves the proposition that there is a gain in body weight during pregnancy (apart from the increase in the contents of the uterus). This may be granted as it is borne out by the work of Gassner (330 women), and Baumm (16 women). Their figures show that women gain six times more often than lose weight during pregnancy, that heavier women and multiparæ gain more than others, and that the gain is greater on more nutritious diet.

The next important contribution is Dreysel's paper dealing with the heart measures of cases coming to the Munich Pathological Institute from 1881-1890. In sixty-seven cases the weights are given, but for various reasons the figures are not fairly comparable with Mueller's, and the author's attempt to make them so by subtracting the average weight of the pericardial fat is not permissible owing to the greatness of its variations. Dreysel is thus deprived of a standard for his measurements, and we have to regret that so much labour has been robbed of its reward. The following table, however, yields points of interest.

Period of Death.	No.	Heart Index.
1-4 months . . .	2	·00492
5-9 months . . .	7	554
Day of delivery . .	7	529
1st week	32	541
2nd „	14	529
3-5 „	5	525

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The sudden drop in the figures for the day of delivery Dreysel interprets as representing an absolute occurrence, a regression of the heart followed by an increase under the influence of lactation. The correct explanation is probably that his cases are too few to give a uniform result. If such fluctuations actually occurred it would be a misuse of the term hypertrophy to so describe the condition. In 76 cases measurements of the cavities and their walls are given, but here also unfortunately the number of cases is too small in some of the groups to eliminate the peculiarities of the individual cases. I am therefore unable to accept the statement of a recent writer that the question is to be considered as finally settled by Dreysel's paper.

It seems to me that the question of the occurrence of cardiac hypertrophy during pregnancy can only be settled by a long series of observations on animals. For this it will be necessary that the investigator establish first his standard on non-pregnant females and then take measurements of heart and body weight at all the periods of pregnancy. At one time I began this work but could not get it continued. It still seems a necessary piece of investigation and I hope that it may soon be undertaken.

With regard to the question of dilatation, no direct measurements but those of Dreysel seem to be available. From his table we take :—

Period.	No.	Height. Body.	L. Ventricle. Length.	L. Ventricle. Thickness.
Under 5 months	1	157 cm.	90 mm.	12 mm.
5-9 months .	5	156·6 „	83·2 „	13·8 „
At delivery .	6	151·5 „	92·7 „	13·4 „
1st week . .	45	151·8 „	87·5 „	13·9 „
2nd „ . .	12	150·8 „	87·2 „	13·3 „
3-5 „ . .	7	151·4 „	86·6 „	12·6 „

From the numbers in some of the groups it is evident that no conclusions can be safely drawn and that his device of taking the proportions to the height[1] is no safeguard is easily shown by the fact that his ten shortest women have a proportional ventricle length of ·6388 and thickness 13·4, while the eight tallest have ·554 and 11·3 respectively. Fellner of Schauta's Klinik in Vienna says that their Obduction reports throughout describe

[1] It is by no means to be taken for granted that height is proportional to body-length, which should be measured from head to pelvis.

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dilatation, never hypertrophy. We must, however, leave this question also for further evidence.

The *cardiac dulness* is distinctly extended upwards and to the left. Upwards the increase may reach 2 cm., and in the fourth interspace 3·5 cm., the normal measure being 7 cm. This has been made an argument for cardiac hypertrophy, Duroziez, in particular, pressing it hard even after Gerhardt had shown that owing to the disturbance in the heart, form, and position from the pressure of the diaphragm it was fallacious.

Of the *heart sounds*, Fellner says that in 900 cases he has never observed the alleged disappearance of the first sound. Jacquemier described a *bruit de soufflet.* Marx found it in 14 of 60 cases, but 9 were chlorotic. In the other 5 no cause but the pregnancy could be assigned. Fellner says that he frequently found it at the apex and more often at the base. In addition he says that in 95 per cent. he heard a distinct rough blowing sound to the left of and often over the sternum. The first murmur he explains by a relative incompetence of the mitral valve, but for the second he will not decide whether it is venous or valvular. Letulle has also described these sounds, but Vinay rightly says that though frequently heard this is by no means the rule, and that when murmurs exist they are frequently chlorotic or extra-cardiac.

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(*To be continued.*)

OPHTHALMOLOGY

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Asthenopia. By Lucien Howe, M.D., Buffalo, U.S.A., *American Journal of Ophthalmology*, Aug. 1901.—In his interesting article on asthenopia the author sums up as follows:—"It seems quite certain that a larger proportion of all the cases of asthenopia apply for relief in the United States than do elsewhere, the reason for this being the comparatively slight aversion of patients to the use of

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glasses, the fact that the average American ophthalmologist is better equipped than his foreign *confrères* for detecting errors of refraction and of muscle balance, that he takes pains to correct even small variations from the normal condition, and that the American optician has much more complete appliances for grinding lenses accurately and fitting them satisfactorily than has the average optician of any other country. The occurrence of asthenopia from slight errors, which is apparently much more common in the States than anywhere else, is attributed to—(1) carelessness in the use of the eyes; (2) causes affecting the nervous system—chiefly the constant hurry and the intense mental strain of modern American life; (3) causes affecting the digestive tract—Americans eat more meat, devour it more hastily, and drink an amount of fluid which may be insufficient, and which certainly is much less than that consumed in wine or beer-drinking countries. Americans according to the author must have perfect vision, and will not tolerate even a trifling error of refraction that will produce the slightest inconvenience."

An American's Observations on Ophthalmology in Europe.—It is a favourite custom with Americans to record their experiences of visits to European eye clinics, and the following observations by Dr Wescott in the *Clinical Review*, Dec. 1901, are interesting. In agreement with some other American ophthalmologists, Dr Wescott states that German hospital patients are treated no more scientifically, nor apparently successfully than the American, and that their refraction and muscle condition are generally neglected. "The writer saw no careful refraction work on the Continent, but saw many patients with red, tired eyes, whose vision was not even tested, to say nothing of refraction; a diagnosis of chronic conjunctivitis was pronounced, the lids were swabbed, and the patient passed on to make room for the next, whose case was, perchance, more interesting."

"One cannot avoid the feeling, as he visits one after another of the large eye clinics of Europe, that the good of the patient is a very secondary consideration, and goes away from the hospital feeling that it is an institution provided and managed for the development of a professor and his assistants. The patient furnishes the material, profiting incidentally, if things go well. As a rule, too many patients are seen to make thorough examinations possible, and yet it is quite true that, in the private practice of the great men on the Continent, the refraction and muscle condition are not studied with the care which we in America find it necessary to devote to them. Doubtless the German ophthalmologists see fewer of the nervous type, that

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forms so large a contingent of the patients of the ophthalmologists in this country. It is doubtless also true that, if more careful refraction work were done in Europe, one would see fewer cases of cataract and chronic inflammatory conditions, and fewer cases of high myopia with the attendant retinal detachment and permanent loss of sight, which are so common over there, and which are becoming undoubtedly steadily less numerous among intelligent Americans who have learned to consult the ophthalmologist early and often. The possibilities, however, for the study of pathology and ophthalmoscopy in the German-speaking countries are not equalled on this side of the water, and probably for a number of years Americans will continue to go abroad because of the very great advantages in the study of pathology."

"While one may see a great number of operations upon the eye in the large clinics of Europe, the surgery is not so good, as a rule, as one may see in this country, with the possible exception of that which is being done at the new Moorfield's Hospital in London. The cleanest surgery which the writer saw on the Continent, with perhaps one exception, was in the clinic of Prof. Czermak, in Prague. . . ."

"Prof. Fuchs of Vienna is undoubtedly the greatest teacher of ophthalmology in Europe, and perhaps we should say, in the world. . . . Prof. Fuchs' clinic is enormous, but his facilities for work at the old Krankenhaus are bad, and we are glad to know that the old buildings are to be torn down and a new modern hospital erected. His teaching, however, is almost ideal, and there is probably no place in the world where more interesting and rare cases are demonstrated by so able a man. . . . Prof. Landolt of Paris is wisely progressive, and his aseptic technique is practically perfect."

"The finest and largest hospital, devoted exclusively to the eye, which the writer visited, was the Royal Ophthalmic, London (Moorfield's). It is only two or three years old, and thoroughly up to date in all its appointments. Recently systematic courses of lectures have been given, which are much praised by the students of ophthalmology who are always in attendance upon the clinics. Pathology and ophthalmoscopy are not taught in London as they are in Vienna, and the most interesting cases are not selected and demonstrated daily by such a master as Fuchs in a public clinic, but good work is always going on, and it is one of the best places in the world for one who has seen a lot of eye work to see more and to study rare cases."

"After visiting our best men in New York, Boston, Philadelphia, Omaha, and Denver, and the great clinics of Europe,

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one returns to America feeling very proud of American ophthalmology and our ophthalmologists. We are absorbing constantly and eagerly the practical truths developed in the Old World, and applying them with a readiness and skill which our English cousins speak of as characteristically American. We are doing more for suffering eyes, and doing it more easily and quickly, than anywhere else in the world."

Subconjunctival Injections of Gelatine. By Dr de Wecker, Paris (*Ophthalmic Review*, Feb. 1902).—The mode of treatment of aortic aneurism by injections of gelatine has apparently been so successful that de Wecker has thought it well to try whether a similar procedure would have a beneficial effect on the eye. In detachment of the retina the subconjunctival injection of 10 or 20 per cent. solutions of sodium chloride has been found to cause so much pain that, though it is capable of doing much good, one shrinks from employing this method of treatment. He has tried subconjunctival injections of gelatine, either by itself or with chloride of sodium, in the proportion of 3 to 5 per cent., and found these to be practically painless, and at the same time to give very encouraging results. It is not only in detachment of the retina, however, that such injections exercise a beneficial influence; in cases of hæmorrhages into the vitreous he has seen rapid and wonderfully complete absorption follow their employment. Of such experience he gives a brief but interesting account, and advises the use of glycerine also in various forms of hæmorrhagic retinitis. The gelatine should be prepared from isinglass, should be of 2½ per cent. concentration, and should always be fresh, and undergo sterilisation immediately before use.

Cocaine (*Ophthalmic Review*, Feb. 1902).—Lazzaro and Traina of Palermo have carried out an investigation into the action of cocaine produced from coca leaves, and the same substance manufactured synthetically. In regard to anæsthesia of the eye they found no evidence of inferiority on the part of the artificial products; indeed, in certain of their investigations it appeared to give more complete and more lasting anæsthesia. Chemically, they regard the two forms as exactly the same; in the higher animals the action of the two shows practically precisely the same effect, for any differences were so extremely slight as to prove no superiority of one kind over the other; while, tested in the human subject, their anæsthetic effects were indistinguishable.

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Editorial Notes and News

Vaccination Decision. A DECISION of far-reaching importance was recorded in the King's Bench Division on March 5th, when the Lord Chief-Justice—Messrs Justices Darling and Channell concurring—dismissed an appeal, the object of which was to interdict the Vaccination Officer of Leicester from enforcing the proceedings of the Vaccination Act without the consent of the Guardians. It will be remembered that the Guardians only appointed a Vaccination Officer, under compulsion, to avoid being sent to prison, and they have since endeavoured to nullify the appointment by issuing instructions that he was not to prosecute defaulters. The Vaccination Officer, however, is evidently made of sterner stuff than they expected, and instituted prosecutions in spite of the Guardians. The Lord Chief-Justice in his decision said the Vaccination Officer was forced to obey the order of the Local Government Board, and any order of the Guardians interfering with that he would not be bound to obey.

The decision is a most satisfactory one, and will be most unpalatable to those Boards of Guardians who have hitherto successfully defied the law.

What the Pilgrim Fathers do—A Worsted Anti. A STUBBORN anti-vaccinationist in Boston was recently saved in spite of himself. He refused to submit to vaccination and was accordingly fined five dollars; then he refused to pay the fine and was sent to jail for ten days. As soon as he was locked up, the jail physician vaccinated him, as the law authorises the health authorities to vaccinate prisoners whether they like it or not. And so this "conscientious objector," as the anti-vaccinationists are euphemistically called in England, was well vaccinated, but still had ten days to stay in jail for refusing to be vaccinated. It is to be hoped the victim has a sense of humour to alleviate the pains of martyrdom. — *Boston Medical and Surgical Journal.*

Appointments. DR THEODORE SHENNAN has been appointed to succeed Prof. Welsh as Pathologist to the Royal Infirmary, Edinburgh, and his place as Assistant Pathologist has been filled by the election of Dr Beattie, Prof. Greenfield's first Assistant. Dr Shennan is to be

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allowed to devote one hour daily to outside teaching, so that he will be able to continue his Systematic Course on Pathology.

The Vaccination difficulty, caused by the refusal of the Local Government Board to appoint a successor to Dr Husband, has been met by the appointment of Dr F. M. Cadell as Vaccinator to the Edinburgh Provident Dispensary, Marshall Street, and the N. T. D. will know him no more.

Dr Stuart MacDonald has been appointed Pathologist to the Royal Hospital for Sick Children.

Glasgow and its M.O.H.

THERE is a sort of armistice at present between the different sections of the Glasgow Health Department. The Committee appointed by the Town Council to frame Rules regulating the conducting of each Department is still occupied with the consideration of these.

The Glasgow Hospitals have benefited largely by the bequests of the late Mr James Dick; the Royal and Western each received £20,000, and the Victoria £10,000. The classes in Glasgow closed on Good Friday.

The Midwives Bill.

THE Grand Committee stage of this was soon over. The promoters of the measure would listen neither to rhyme nor reason, and the Bill leaves the Committee almost exactly as it entered it. It is alleged that its passage was greatly facilitated by the support of the opponents of the Deceased Wife's Sister. It seems that the progress of the Midwife automatically obstructs the other lady, and hence the enthusiasm for Midwives Legislation.

The Bill is by far the worst of those ever introduced. It contains all the bad points of the previous measures, and so far as Scotland is concerned, we can see in it only one satisfactory clause, viz., Clause 17: This Act shall not extend to Scotland or Ireland.

The Bill may be very briefly described. It is a Bill to legalise the previously irregular proceedings of the London Obstetrical Society. The certificates of that body were condemned by the General Medical Council as colourable imitations of Diplomas, and had to be withdrawn. Now under the new Bill the Society may enlarge them, paint them, frame and glaze them at will.

By Clause 5, the certificates of the Royal College of Physicians of Ireland and the London Obstetrical Society are formally recognised as giving the right to certification. It is hardly

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credible that the proposers were unaware that the Royal College of Physicians of Ireland ceased to issue certificates two years ago, and it is amazing that when they were informed of it they persisted in retaining the clause unchanged.

We trust that the duty of moving the rejection of the Bill on its report stage will be entrusted to some influential advocate, for if passed into law in its present form, the Bill will be a direct danger to the public safety.

The medical members were unfortunately not united. Sir John Batty Tuke fought hard in Committee, but his influence was weakened by the fact that his name originally appeared as one of the backers of the Bill. To Dr Farquharson we would commend the old Scottish proverb about a bird and its own nest. If we had not had Sir Michael Foster's statement, that for six years he had been engaged in the practice of midwifery, we should never have suspected it. It must have been very many years ago, for we cannot imagine anyone familiar with the modern nurse, deliberately stating that "a midwife was a nurse *and something more.*"

General Medical Council.

THE special meeting of the Council to consider the rebellion of the English Colleges terminated more peacefully than at one time seemed likely. It appeared that indirectly the Scottish Colleges and certain Universities were also breaking the letter of the law, and the Council wisely decided to enquire into the character of the institutions recognised by the English Conjoint Board before taking any further steps.

If these institutions, or any of them, will not stand investigation, then the Council will have a very strong case against the Colleges.

But the time is coming when the subjects under dispute will be dealt with in a preliminary scientific examination, and the Council will have four years clear for medical education proper.

A Chair of Bacteriology.

JUST as we go to press, we hear that the late Mr Irvine of Granton has bequeathed the sum of £30,000 to the University of Edinburgh, for the purpose of establishing a Chair of Bacteriology. We have long been of opinion that such a Chair was the most crying need in the Medical Faculty, and we earnestly trust that the bequest is unhampered by any restrictions, and that no personal friend of the donor is designated as the first occupant of the Chair.

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The Town Council, the Usher Institute and the Profession.

There may be occasional troubles in Municipal Health Departments in this country, but we have fortunately not reached the stage which they have in the New World.

"Ernest Wende, Health Officer of Buffalo, is removed because he is a Democrat and because a Republican Municipal Government was recently placed in power." "The Profession in Buffalo expressed itself almost with unanimity against such a crime, but the politicians smiled at its vain resolving."—*American Med.*, Jan. 18, 1902.

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The above paragraph was in type early in March, and we have allowed it to stand for the sake of its unconscious and unintended humour.

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Since we last wrote the matter has varied like a kaleidoscope. First the Town Council, when on the verge of a decision favourable to the views of the profession, was, by a common parliamentary trick, counted out. Then, by an enormous majority, it decided to transfer the reporting to the Usher Institute. At its next meeting it confirmed this decision by a narrow majority, which, we are informed, would have been narrower had not one or two of the Councillors been accidentally absent from the division, and there is now every reason to hope that at the next meeting the Council will decide that after all the Medical profession are the best judges of the qualifications of a laboratory.

It is really deplorable to see the Trustees, for we think it should be made very clear that it is the Usher Trustees and not the University, engaging in a sort of Dutch auction, and, by their mouthpiece, Mr Richard Clark, making desperate bids of more and more specimens to be examined for £300 a year. One almost expects that at the next meeting, following the example of the Tobacco Trusts, they will offer the Council a bonus for a year or two.

We are not greatly perturbed over the studied offensiveness of one or two of the Councillors, but we really must protest against the claim of Mr R. Clark to speak for the Medical profession. We understand Mr Clark is a member of a firm of wholesale chemists, but, really, so indirect a connection with the profession as that does not entitle him to vouch for the opinion of the majority of the medical practitioners of Edinburgh.

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New Books and New Editions

Selected Essays and Addresses. By Sir JAMES PAGET. Edited by STEPHEN PAGET, F.R.C.S. Pp. 445. London: Longmans, Green & Co. 1902. Price 12s. 6d. net.

MR PAGET has conferred a distinct boon on the profession by the publication of those admirable Essays and Addresses by the late Sir James Paget. To the older generation of surgeons and pathologists many of them are well known, and have been of great value. To the present generation they are less accessible, and thus less well known; but even after thirty years, the truths recorded, and the opinions founded upon them, are extremely valuable.

It is not easy for a young man rejoicing in his youth, and cognisant of the absolutely marvellous progress made in practical surgery during the last quarter of a century, to believe it possible that he may learn anything from papers written or lectures delivered thirty-five years ago. In the majority of cases he is perfectly right, and no one would go for instruction in methods of operation, or even in theory of pathological arrangement, to any works except the most recent. But much of Sir James Paget's work, founded on sound principles, and impact of wide experience, remains most valuable.

The lecture on "The Cases that Bonesetters Cure" is full of sound sense, and contains many practical hints of great value. He foresaw much of the value and also of the risks of massage and forcible flexion. One little sentence contains much homely wisdom to guide in the selection of cases: "I believe you will be safe if you take the temperature of the part for your guidance. If the part be always overwarm, keep it quiet; if it be generally cold or cool, it needs and will bear exercise and freedom from restraint of bandages, with friction and passive movements, and other similar treatment of the reviving kind" (p. 14). He was hardly bold enough to approve of the treatment of recent sprains by massage and movement; though he knew of its power, he would limit its use to the case of "very healthy men." Paget knew of the cases of dislocated cartilage in the knee-joint, but does not even allude to the operative treatment of such cases which Professor Annandale brought under the notice of the profession, and which is now so generally adopted. The famous paper on "Stammering with other Organs than those of Speech," is still an authoritative pronouncement on a very interesting and difficult subject. The still more famous

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lecture on "Sexual Hypochondriasis" remains a classic on a subject requiring both delicacy and firmness. One noble sentence cannot be quoted too often: "Many of your patients will ask you about sexual intercourse, and some will expect you to prescribe fornication. I would just as soon prescribe theft or lying, or anything else that GOD has forbidden" (p. 49).

The chapter on "Dissection Wounds" contains an account of Sir James' own case. It maintains the interesting proposition, which experience of many anatomists and surgeons seems to verify, that a man by custom may become insusceptible to the evil effects of corpse poisons (p. 59); while after a long holiday from such work, and while in presumably a higher state of general health, he will again become susceptible to contact of such poisons. The last sentence of the chapter is an interesting one: "Sir William Lawrence used to say that he had not known anyone recover on whose case more than seven had consulted. Our art has improved. I had the happiness of being attended by ten — Sir Thomas Watson, Sir George Burrows, Sir William Jenner, Sir William Gull, Dr Andrew, Dr Gee, Mr Cæsar Hawkins, Mr Savory, Mr Thomas Smith, and Mr Karkeek. In this multitude of counsellors was safety. The gratitude I owe them is more than I can tell—more than all the evidences of my esteem can ever prove" (pp. 71, 72).

The six great lectures on "Nervous Mimicry" have lost none of their value by efflux of time. They are absolutely invaluable in assisting in the diagnosis of those very difficult cases where the mind dominates the body in a manner which is apt to deceive the surgeon, especially the young and active surgeon.

Then we have the four classical pages in which Paget's disease was first described, papers on Anæsthetics, on the Sequelæ of Typhoid Fever, on Theology and Science, a Hunterian Oration, and a Presidential Address, all full of interest and wisdom. Articles on Temperance and Abstinence, and on Experiments on Animals, exhibit the self-restraint and sagacity with which Paget could see both sides of a question. He notes one absurd consequence of the Vivisection Act: "I may pay a rat-catcher to destroy all the rats in my house with any poison that he pleases; but I may not myself, unless with a licence from the Home Secretary, poison them with snake poison, nor, without an additional certificate, try to keep them alive after it" (pp. 348, 349).

The well-known papers on "Rare and New Diseases," on "Errors on the Chronometry of Life," and on the "Use of the Will for Health," conclude this most interesting volume. We must quote one counsel of perfection for people who are fanciful about having their meals at regular and fixed times:

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"There are few of these who may not safely resolve that they will not fix the times, but will breakfast and dine whenever they please, or when circumstances make it most convenient. Their digestive organs will submit to their wills, if their wills do not submit to them" (p. 444). Some of us older ones will remember how quaintly the late Sir Douglas Maclagan enforced, and how successfully he practised, the doctrine.

A Manual of Medicine. Edited by W. H. ALLCHIN, M.D., F.R.C.P., F.R.S.E., Senior Physician and Lecturer on Clinical Medicine, Westminster Hospital. Vol. ii., 1900, 8vo, pp. 380, 2 plates; Vol. iii., 1901, 8vo, pp. 417, 6 plates. London: Macmillan & Co., Ltd. Price 7s. 6d. net each volume.

THESE volumes keep up the high standard set by the first volume. Volume ii. deals with the diseases caused by parasites, those determined by poisons introduced into the body, the primary perversions of general nutrition and diseases of the blood. The section on parasites is good on the whole, but there is a singular infelicity in the choice of illustrations. Half a page is taken up by a figure of a semi-diagrammatic dissection of a female *ascaris*, and there is a large scale drawing of *oxyuris*, but there are no figures of these worms to show their ordinary appearance, none of the ova of the ordinary intestinal parasites are illustrated though they are so important in diagnosis, and there are no drawings of the *filariæ*. The section on autogenetic poisons by Dr Allchin is short, but thoughtful and suggestive, and the same may be said of the article on senility by the same writer. A good deal of space is taken up by chapters on inflammation, on retrogressive and progressive changes, much of which it would have been better to relegate to pathological text-books. The diseases of the ductless glands and the general conditions, such as gout, diabetes, rickets, etc., are well discussed; the sections on acromegaly and allied conditions by Dr Raymond Johnson are particularly to be commended. The blood under normal conditions and the methods of examining it are dealt with by Dr Louis Jenner, and these sections are clear, concise and accurate; but the diseases of the blood, though everything that is essential is said about them by Dr Coupland, are described on such a confused plan that we fancy the student will not be led by this section out of his usual Cimmerian darkness on the subject. The general pathology and etiology of all the blood-diseases is first taken up; then the morbid changes in the blood and blood-forming organs in the whole of them; and lastly, the clinical features; so that, in order

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to get a clear picture of any one disease, the unfortunate reader must hunt through the various sections. The inevitable result of this confusion is that the diseases are not nearly so well differentiated as they are in reality, and the reader is left with an uncomfortable impression that there is only one disease of the blood, with many varieties.

Volume iii. is the best of those yet published and gives, indeed, probably the best view in short compass of the diseases of the nervous system which has yet been published. The introduction, by Professor Sherrington, gives an admirably lucid account of the general anatomy and physiology of the nervous system. The other sections are almost uniformly good, so that it is not necessary to mention any of them specially.

We would suggest to the editor that a fuller index than is given in either of these volumes would be found useful in the future ones.

La Cure Pratique de la Tuberculose. Par le Dr P. PUJADE (d'Amélie-les-Bains). With preface by Dr BOIRAC of Grenoble. 8vo, pp. 369. Paris: Carré et C. Naud. 1900. Price 3 fr. 50.

THE first half of this book is devoted to a consideration of the progress of tuberculosis, to its curability and to its symptoms, whilst the second half deals with the cure of the disease.

The author vindicates his claim to write this book because of the discovery of the tubercle bacillus and the proof that it is the incontestable agent in the transmission of the disease. He shows that a quarter of the total deaths in towns are due to tuberculosis. In country districts the proportion is less although it is tending upwards towards that of the town. In France, 150,000 persons die each year from phthisis.

Dr Pujade draws very strong attention to the principal cause of the implantation of tuberculosis as being due to the respiration of air already inspired. If cures of this disease by the open air treatment are often met with, there is all the more reason for hygienic precautions to obtain abundance of fresh air for workmen so as to prevent the access of tubercle. We are familiar with the researches made in Glasgow as to the greater incidence of phthisis in one roomed houses as compared with two and three roomed houses.

The author cautions the practitioner as to the prognosis which he may give regarding early cases or of those where the physical signs are so slight that a positive diagnosis is very difficult. The first attack in ninety-nine in a hundred cases ought to be curable the author firmly asserts, if the invalid consents to follow implicitly the advice of the doctor, and when the dangers to which he will be exposed are carefully explained to him.

The cure of tuberculosis may be summed up in three terms: air cure, rest cure, food cure. As regards the fresh air cure, Dr Pujade wisely remarks that we ought not to make the consumptive immediately leave his ordinary mode of life. The change from a sedentary life to a continuously open air life must be made somewhat gradually, and the same with the throwing open of his bedroom windows. The rest cure consists in making the patient recline on a long, low chair in the open air.

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Continuous rest in bed is only recommended when fever is continuous, when walking raises the temperature above 99·5, when simple rest does not bring it below this temperature, and lastly when new foci in the lungs appear or septicæmia ensues.

Dr Pujado believes that suralimentation is an error. He thinks that many of the troubles of the consumptive are due to excess of food (dilatation of the stomach, hypertrophy of the liver, nausea, vomiting and diarrhœa). As regards the administration of raw beef to consumptives, the author has seen several cases where it produced tænia, and this when not diagnosed soon carries off the patient. He relates that one of his patients was troubled with tænia (undiagnosed) and with symptoms so perplexing that a noted surgeon performed a double ovariotomy on her. This operation, however, did not affect the tænia, which was expelled some time later.

With reference to medicinal treatment, the author employs hypodermic injections of creasote and iodoform dissolved in sterilized olive oil. He speaks favourably of the employment of tannin when used in large doses of from 7½ to 46 grains per day. For early hæmoptysis ipecacuanha is, he says, an admirable drug, given in large doses. For hæmorrhages occurring during the second period, the treatment ought to be more varied and more prolonged. Dr Pujade prefers in such cases opium or morphine with digitalis given from the commencement of the attack. For the sweating of phthisis the author has entire confidence in tellurate of sodium given in ½ to 1 grain per diem.

The last chapter is devoted to a discussion on the value of cold air, high altitudes and sanatoria on the progress of tuberculosis.

The author writes in a free and colloquial style and in a manner easily understood by non-medical readers. The work is interesting though it contains nothing new in the way of treatment.

The Scientific Valuation of Alcohol in Health. By Captain Patrick W. O'Gorman, M.D. (Brux.), M.R.C.P.Ed., etc., Indian Medical Service. With a preface by Professor G. Sims Woodhead. Pp. 64. Edinburgh: Wm. F. Clay. 1900.

This booklet is a revised and enlarged version of an address delivered be Captain O'Gorman to the British Medical Temperance Association on thy 17th February 1899. The author discusses alcohol under various headings. In answer to the question, whether alcohol is a food which nourishes and strengthens the body, he says that, taken altogether, the evidence is pretty clear that alcohol cannot be regarded as a food of any kind, and it cannot therefore either strengthen or nourish the body. While certainly not advocating the general use of alcoholic beverages, we entirely dissent from the statement that there can be no such thing as a "nourishing stout" or that red wines (as claret) cannot possibly "make blood." Claret or Burgundy act as tonics much in the same way as ordinary drugs used as such, and like these they stimulate digestion and absorption, and so indirectly increase the hæmoglobin and hæmocytes of the blood. Captain O'Gorman does not believe that alcohol retards waste or economises food.

We think that the author is perfectly correct in stating that alcohol is not a stimulant which directly imparts energy. After the first brief excitation passes off, every bicyclist or pedestrian knows that muscular power is much enfeebled compared to what it was even after fatigue but before partaking of alcohol. Captain O'Gorman discusses other interesting questions,

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such as whether alcohol imparts heat or preserves the body against cold; whether it is useful in hot climates; whether it is a poison or if it conduces to longevity.

Unfortunately, however, that consideration which would have been of chief interest to medical men, namely, Is alcohol efficacious in the treatment of disease? has had to be postponed by the author to another paper.

So far as he has treated of the value of alcohol, we believe that Captain O'Gorman has stated his case fairly and consistently. We are fully convinced that the use of alcohol in health is unnecessary. It is purely a luxury and one which is unfortunately grossly abused by too many. We are not, however, convinced that alcohol is useless or even harmful in many cases of disease.

Professor Woodhead contributes a preface commending the work of Captain O'Gorman and hoping that, as the practice of bleeding was formerly as thoroughly believed in by medical men as is the treatment by alcohol by many to-day, so he hopes that alcoholic treatment will be as rarely resorted to in the course of the next twenty or thirty years as the practice of bleeding is now.

An Index of Symptoms as a clue to Diagnosis. By RALPH WINNINGTON LEFTWICH, M.D., Late Assistant Physician to the East London Children's Hospital. Second edition. London: Smith, Elder & Co. 1901. Price 6s.

THIS little book, which is interesting as being the embodiment of a new idea in medical literature, is one which may appeal to the junior members of the profession, and we must admit that to the seniors it may also on occasion be useful by bringing all possibilities before their minds.

To the person, however, who attempts to diagnose his cases by help of this kind, the possibilities may, we fear, be both confusing and alarming. Suppose a case of intractable headache. You look up "headache" and find that your patient may have one of a large variety of diseases, the list including Adenoids and Ague, Measles and the Menopause, Catalepsy and the Plague, and many other startling conditions. The above examples, however, probably only show the author's desire to be as comprehensive as possible.

The Illustrated Medical Dictionary. By W. A. NEWMAN DORLAND, A.M., M.D., Assistant Obstetrician to the University of Pennsylvania Hospital; editor of the American Pocket Medical Dictionary, etc. Second edition, revised. Pp. 770. London: W. B. Saunders & Company. 1901. Price 19s.

THIS medical dictionary is one of the best we have seen. To use the author's words, he has "sought a middle course between the large, unwieldy lexicon and the abridged students' dictionary, avoiding the disadvantages of each," and we think he has realised his aim. The book is moreover well illustrated. Both the pronunciation and derivation, as well as the definition of words are given, and the plates are excellent. The book is well and attractively bound and printed, and we have pleasure in recommending it to our readers.

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How to Examine the Chest. A practical Guide for the use of Students. By SAMUEL WEST, M.D. Oxon., F.R.C.P., Assistant Physician and Demonstrator of Practical Medicine, St Bartholomew's Hospital. Third edition. London: J. & A. Churchill. Price 5s.

WE have pleasure in recommending this little volume to students of medicine and practitioners. The subject is treated systematically, the writing is concise and lucid, and the book bears the stamp of the author's experience.

The book also contains a section on the pulse which we think might with advantage have been noticed in the title. This section throughout is so admirably correct that we would gladly see it in the hands of all students and teachers.

Cremation: Its History and Practice to the Present Day, with Information relating to the Latest Improvements and Experience both in this Country and Abroad. By Sir H. THOMPSON, Bart., F.R.C.S. Fourth edition, revised and enlarged. Pp. 183. London: Smith, Elder & Co. 1901. Price 2s.

THAT the general and medical public interests itself in cremation is shown by the fact that a fourth edition of Sir Henry Thompson's work has been called for, the third edition having been published so recently as 1899.

The Society formed by Sir Henry Thompson has now existed for twenty-seven years, and no one is better fitted than its esteemed President to relate with accuracy the incidents and varied experience which the movement has encountered.

The first three chapters deal with the inception and history of the Society. The movement first began in Italy in 1869 by the cremation of a body by Brunetti. It spread very gradually at first through other countries. At the present time, however, there are thirty-seven cremation societies in the German Empire, with an aggregate membership of 37,600 (an increase of nearly 26,000 on the preceding year). In the United States there are twenty-five crematoria, and the total number of bodies cremated there since 1876 has been 13,012. Our French friends were unusually long (for them) in adopting cremation, their society having been founded in 1884, and it was only in 1887 that cremation was first actually performed on the bodies of two men who had died of smallpox. By 1891, however, more than 3000 bodies had been cremated in Paris alone, while during 1898 upwards of 4000 bodies were cremated. At Woking up to the end of 1900 the large number of 1824 bodies had been thus disposed of.

Before a body can be cremated the executors must forward two special medical certificates as to the cause of death, or if no medical man has attended the deceased, an autopsy must be made by a medical officer approved by the Society or the cremation cannot take place. These precautions are to avoid the possibility of the deceased having died from poison.

It was the council of the Cremation Society which initiated in 1893 a movement for memorialising the Government on the imperfect method of death certification in this country, many cases of death escaping certification

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altogether. Unhappily no action resulted, and this unsatisfactory state of things still exists.

We sincerely wish that a knowledge of the benefits of cremation might be still further and more rapidly spread, and this volume of Sir Henry Thompson, so well written and published at so cheap a price, will do much to hasten this desirable end.

Experiments on Losses in Cooking Meat. 1898-1900. By H. S. GRINDLEY, D.Sc., Bulletin No. 102. Pages 64. U.S. Department of Agriculture, Office of Experiment Stations, A. C. True, Director.

THIS bulletin is one of a long series of dietetic studies which is being issued by U.S. Department of Agriculture, and which are all characterised by evidence of careful scientific work. In this instance there is recorded a long and elaborate series of observations on the effect of the different modes of cooking meat. The result of these observations is to emphasise our present ignorance in so commonplace a matter. That meat looses weight in cooking is of course well known, but of what the lost portion consists is still far from being cleared up, or in other words the composition of the broth is still imperfectly known. Dr Grindley's work undeceives us in one old fallacy, for he shows fairly conclusively that the loss by placing the meat in cold water and then raising to boiling temperature is not materially more than the loss from meat put in boiling water direct. There are many points of interest which can be gleaned from this work by the student of dietetics.

A Text-Book of Medicine for Students and Practitioners. By Dr ADOLF STRUMPELL. Third American edition. Translated, by permission, from the thirteenth German edition by Herman F. Vickery, A.B., M.D. Royal 8vo, 1242 pages. London: H. K. Lewis. 1901. Price 24s. net.

A TEXT-BOOK which has gone through thirteen editions in its native language, German, three editions in English, and also appeared in French, Italian, Spanish, Russian, Modern Greek, Turkish, and Japanese, may reasonably be expected to be a good one, and a scrutiny of this, the most recent English edition, fully justifies that expectation. It is a text-book pure and simple, it does not pretend to be a complete reference work, it gives a readable and reliable digest of our present knowledge of the subject, but it does not undertake to give a complete record of all that is written on the subject, nor does it give the full bibliography which should accompany works for reference.

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For the purpose of the student of medicine and of the practitioner desirous of recent information in a readily accessible form this book may be commended, for in it the list of diseases treated is very complete, and the description of each is clear, is up to date, and embraces all essential points.

Nothnagel's Encyclopedia of Practical Medicine. "Saunders' English Edition." Small-pox (including vaccination), Varicella, Cholera Asiatica and Cholera Nostras, Erysipelas and Erysipeloid, Whooping-cough and Hay Fever. Edited, with additions, by Sir J. W. MOORE, B.A., M.D., F.R.C.P.I., Professor of Practice of Medicine, Royal College of Surgeons in Ireland. 8vo, pp. 685. Cloth, 21s. net.

THIS volume is well worthy of careful perusal by those who are interested in the subjects discussed. The chapters on small-pox and vaccination have, at this time, a special interest, and will be found to be of great value by those who have to deal with the ignorant prejudices of anti-vaccinationists. With regard to doubtful points in each subject, the views of authorities are stated and judicially weighed. The bibliography is very full, that relating to Cholera Asiatica and Cholera Nostras almost oppressively so, occupying no fewer than fourteen pages. The bibliography of Small-pox is given at the end of the various questions discussed, an arrangement which will greatly facilitate reference. The least satisfactory chapter is that on the diagnosis of Varicella. In the prognosis of Whooping-cough the importance of bronchitis and of rickets have hardly sufficient prominence assigned to them. In the treatment of that disease, although bromoform is discussed, the use of the bromides is not mentioned, nor the evaporation of carbolic acid, nor of cressol, the beneficial effects of which are so clearly shown in severe cases with epistaxis. For the treatment of epistaxis mineral acids are recommended; probably adrenalin solution with chloretone had not been introduced when the original work was published. Vaccination scratches of an unnecessary length—two to three centimetres—are recommended. The volume is a remarkably good translation with few idiosyncrasies, the type is clear and favourable to what is in itself pleasant reading. The new spelling is a little startling at times—"niter," "goiter," "traveler," "oxid," etc. Post-mortem Findings is a heading which is uncommon. Throughout the book an effect is said "to stand in direct causal relation" to that which produced it.

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Lectures on Chemical Pathology in its Relation to Practical Medicine. By C. A. HERTER, M.D. London: Smith, Elder & Co. 1902.

THE lectures which make up this volume were delivered at the University and Bellevue Hospital Medical School, New York. They are well worth perusal. They do not pretend to be a text-book of pathological chemistry, but are a sketch of the leading characteristics of the physiological and pathological processes from the chemical standpoint. The lectures are well written, and give an excellent, succinct account of the subject. The author has added a short list of references, with critical remarks, at the end of each chapter, which should prove of value to the student of any special branch of the subject.

The Academic Gregories. By AGNES GRAINGER STEWART. Famous Scots Series. Edinburgh and London: Oliphant, Anderson & Ferrier. Price 1s. 6d. net.

A MOST readable account of this talented Scottish family, which supplied between 1669 and 1858 no fewer than fourteen professors to the different Universities of Scotland, including two professors of Medicine in Aberdeen, two in Edinburgh, and one, Dr John Gregorie, who filled both these chairs. It is interesting to read that, on his death, his son James, then *a medical student aged* 19, offered to deliver lectures on the Practice of Physic till the end of the term, and that his offer was "most gratefully accepted by the University." At the age of 23 he was elected to the Chair of the Institutes of Medicine, and when 37 he was elected colleague and successor to Cullen. Like all the Gregories, his talents were varied: he wrote a work on the Theory of Moods and Verbs, and he made the name of Gregorie infamous in every nursery by the invention of the famous "Mixture."

Every Scottish medical graduate will enjoy reading the book, and we strongly advise them all to do so. Miss Grainger Stewart may be heartily congratulated on her first (?) effort, the reading of which constantly brings to memory the vivid word-portraits of her gifted father.

The Medical Treatment of Gall-Stones. By J. H. KEAY, M.A., M.D. London: Rebman. 1902. Price 3s.

IN this small work a plea is put forward for the dietetic, hygienic and medical treatment of gall-stones and their associated conditions. The Author holds that restoration of the bile to its normal state suffices to prevent the migration of calculi, and to remove pus, mucus, etc., obstructing the ducts.

Many of the author's views differ from those commonly held, but even were certain of his conclusions more in accordance with actual facts, he is in general strongly opposed to surgical

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measures, and the nature of the treatment advocated is consequently too one-sided to permit of much benefit being derived from a study of the book.

Gonorrhœal Arthritis: Its Pathology, Symptoms and Treatment. By L. VERNON JONES, M.D. London: H. K. Lewis, 136 Gower Street, W.C. 1901.

THE author's "apology for this little book is the absence of any work on the subject," and the consequent difficulty "in obtaining any reliable information except of a fragmentary nature as to the course and treatment of this phase of gonorrhœa." His endeavour to supply the want has resulted in a short, well-written book, containing, perhaps, little that is original or new, but collating the views of authorities in an orderly way, and bearing evidence, too, of personal study of the subject by the author. More than twenty-five pages are given to the pathology of the disease, some ten to the symptoms, and rather more to the treatment. The truth is, the chapter on "pathology" contains a somewhat needless description of Neisser's gonococcus, of the methods of staining, and of the means of recognising it; and a summary, too, of Adami's views on inflammation; scarcely demanded, perhaps, by a discussion of the subject in hand.

In discussing the name, Dr Jones suggests that "constitutional gonorrhœa" might be a more scientific term than the others usually applied to the disease; of these, however, he accepts "gonorrhœal arthritis" as the best. He thinks the non-articular manifestations such as the affections of the lumbar and other fasciæ, iritis and endocarditis are often—at least the two latter—wrongly regarded as of rheumatic origin, and have given rise to the name "gonorrhœal rheumatism."

Bennecke recognises four varieties of the joint disease—hydrops, empyema, the sero-fibrinous and the phlegmonous type. Dr Jones would divide the cases clinically into two groups—cases of invasion of the synovial membrane including Bennecke's hydrops and empyema; and cases of invasion of the fibrous structures round the joints, such as ligaments and endon-sheaths, including Bennecke's sero-fibrinous and phlegmonous forms.

Under "Treatment" he urges attention being paid to the urethritis, and recommends biniodide of mercury of suitable strength as a lotion. In constitutional treatment he mentions one drug after another recommended by various authorities, but considers that "unfortunately drugs do not have much effect on

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the articular trouble." "Salicylate of soda will sometimes partially relieve the pain, but it should not be pushed to its physiological effects as in true rheumatism, for in the first place it has no curative effect in this trouble, and in the second place it is too lowering to be given in large doses without harmful consequences." He thinks that stiff joints are often forcibly moved too soon, and that if kept quiet for a long enough period remarkable cures result.

Modern Surgery: General and Operative. By JOHN CHALMERS DA COSTA, M.D., Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia, etc. Third edition.

DA COSTA'S manual of "Modern Surgery" is so well and so favourably known to the profession that any extended notice of the book is now scarcely called for.

The third edition, which has now appeared, brings the book well up to date; and there are few really valuable advances in our knowledge of the surgical art which have not received notice.

The idea of introducing at the beginning of the book a chapter devoted to bacteriology is altogether excellent; and this part of the work will be found very useful and suggestive, without being unduly elaborated.

The general arrangement of the book is very good; the style is clear and concise; the printing is good, and the 493 illustrations are for the most part clear and instructive, if not, in all cases, very artistic.

The author states that "the work seeks to stand between the complete but cumbrous text-book and the incomplete but concentrated compend." This object may be fairly said to be attained, but the product is one which, while affording a good *résumé* of surgical practice of to-day, is by no manner of means sufficiently exhaustive for the purposes of the operating surgeon, the student, or even of the practitioner.

Diseases and Injuries of the Teeth, including Pathology and Treatment. By MORTON SMALE, M.R.C.S., L.S.A., L.D.S., and J. F. COLYER, L.R.C.P., M.R.C.S., L.D.S. Second edition, revised and enlarged, by J. F. COLYER. 8vo. London: Longmans, Green and Co. 21s. nett.

THE principles and practice of modern dentistry is a subject too extensive to be easily realised by anyone unacquainted

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with its requirements: too complex, too wide in its scope, for any compendium or handbook essaying to grasp its whole extent ever being likely to do it justice. Two sets of qualifications are demanded of its practitioners, the one being entirely different from the other. There is much clever handicraft indispensable on the one side, in what is, perhaps, the major section of the dentist's calling, and which demands all the practical skill and experience of a well-trained workman; and, on the other, there are at the same time certain subjects of medical and surgical research, and many calls for curative treatment, which appeal to the highest attainments in either of these two branches of science. It is a calling which, in its present up-to-date position, ranges through every grade upwards from a trade to a profession, and would necessitate a corresponding amount of acquirements and experience in both. In this way it would, no doubt, always seem best that any treatise on this occupation should, as the one before us exemplifies—restrict itself to one or other department of the business. This, however, is a difficult thing to do. Each section overlaps the other in a way that too often leads to outstanding excellence, medical and surgical, in dealing with the subject, dabbling in mechanics; and equal excellence in mechanics dabbling in medicine and surgery, without much credit either way.

This difficulty, however, has been evidently recognised and wisely steered clear of in the admirable work before us, a work all but exclusively devoted to the pathology and treatment of disease as affecting the dental system. In addition to all that is already generally known in this department of dentistry, there has been further afforded in the present volume an amount of later information in all the more recent phases of medical and surgical knowledge as applying to dental diseases, with which it is expedient and essential that the modern dental surgeon should be acquainted. It would not be to the purpose, nor would it be of much service in a notice of this kind, to enter upon any criticism or discussion of the different views held on certain matters dwelt upon by the authors, or of the comparative merits or the advantages or disadvantages of various special modes of procedure advocated or described. It is the enunciation of general broad principles of treatment proper to be adopted in the various morbid affections incident to this branch of practice, rather than the details of any particular method of their application that can best be conveyed by mere description to the dental student, and that best contributes to his instruction. This object is unmistakably aimed at, and successfully achieved, in the book under

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notice; but, while this has been kept in mind, a copious amount of practical and applied information regarding the operative procedure required in different cases is given, and assisted by numerous excellent illustrations accompanying the text. Several of the chapters included in the first edition of the work have been revised and extended, while some altogether new ones have been added to these. Altogether, the book is one which can be confidently recommended to all students of the pathology and treatment of dental disease.

A Text-Book of Pharmacology and some Allied Sciences. By TORALD SOLLMANN, M.D., Assistant Professor of Pharmacology and Materia Medica in the Medical Department of Western Reserve University, Cleveland, Ohio. 8vo, pp. 894. Philadelphia and London: W. B. Saunders & Co. Price 16s net.

IN the main this book is intended to be a guide to the pharmacological action of drugs. The author in the preface states that he has "attempted to give all the important pharmacologic facts. To facilitate their understanding and memorising, they have been arranged in a systematic and logical manner, and the detailed account of the actions has been prefaced by a very brief summary. To bring out the more important points, liberal use is made of display type, rendering it possible to insert considerable matter intended only for reference, without making the book unwieldy. The experiments and reasoning which have led to conclusions are given in detail whenever necessary. A section on laboratory work has been added," etc. Besides this the book contains much other matter of a preliminary nature.

It is divided into four parts. In Part I. (p. 126) is described the elementary structure of plants, the principle of "meterology," the various pharmaceutical methods in use, the kinds of pharmaceutical preparations, pharmaceutical assaying, prescription writing and incompatibility, and an outline of toxicological analysis. Flavouring agents are also described in this part. In Part II. (pp. 127-760), comprising the bulk of the work, the pharmacology and the therapeutic uses of drugs are dealt with. The third part (pp. 761-803) is confined to practical exercises; and the fourth (pp. 804-844)—an appendix—to the "method of analysing the causes of pharmacologic actions," and to materia medica and other tables adapted from Maisch's "Organic Materia Medica," the U.S. Dispensatory, and Coblentz's "Pharmacy."

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On the whole the book is a disappointing one, and especially for English readers. It is supposed to be adapted to the British as well as the U.S. pharmacopœia, but anyone reading it would gather a very erroneous impression of the "standard authority" on this side of the Atlantic. Moreover, the pharmacology, which is the main feature of the book, is not well done. Although we have read a number of the articles, we have obtained from none of them a clear idea of the action of the substance in question. Some points, we think, are insufficiently stressed; others, usually subsidiary ones, are strongly emphasised. The first thing we read under Phosphorus, for example, is "direct paralysis of heart muscle"; and a few lines lower down, under "Details of Action," "The one acute and direct action of phosphorus is on the heart." This, we think, from the prominence given to it is altogether misleading. In the next paragraph nitrogen metabolism is dealt with, and is said to be "very greatly increased, as much as 300 per cent." And under "Other Effects," we find "The *growth of young bones* is affected in a peculiar manner, somewhat as with arsenic, the cancellous tissue tending to become compact." As it is doubtful whether arsenic causes such changes in bones, and phosphorus certainly does, the reverse way of putting it would have been better. In the "Group of Nitrites" we were surprised to read, "The alkaline nitrites are decomposed by the HCl. of the stomach with the liberation of free HNO_2, and, consequently, are quite irritant to this organ and are little used." In therapeutic and even larger doses, these substances, as far as our experience goes, are particularly well borne by the stomach.

The views advanced are in many cases old-fashioned, and in one case (alcohol) are different in two parts of the book. Its action, it is said (p. 130), "can be explained on a physical basis (solution of the fatty constituents of the cell)"—a theory advanced by Hermann in 1866—whereas on p. 422 the more modern theory of Meyer is given.

The book also contains many errors. Injectio Morphinæ Hypodermica (p. 223) is said to contain one per cent. of the tartrate; mannite is described as a sugar (p. 21); morphina is said to have been discovered in 1817, which is the date when its basic properties were first described; and amyl nitrite is Latinised as amyli nitris (p. 474), which, if it means anything, means nitrite of starch—a substance not yet prepared.

The diagrams, too, generally speaking, are poor, and the majority of them are unnecessary. It seems superfluous in a book of this kind to give drawings showing the sizes of glass tubing and the method of folding a filter paper. Lastly, the book, although only of moderate size, weighs $4\frac{1}{4}$ lbs.

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Notwithstanding these faults, the book possesses some good features. We are glad to see an attempt at scientific arrangement, although this is to be found in most modern books, and the description of flavouring and colouring agents is good; but the latter are more than counterbalanced by the former, and consequently we do not feel able to recommend it to students and practitioners as a reliable guide to the pharmacology or the therapeutic uses of drugs.

A Short Practice of Midwifery, embodying the treatment adopted in the Rotunda Hospital, Dublin. By HENRY JELLETT, B.A., M.D., etc. Third edition, revised and enlarged. Pp. xxv., 533, with 124 illustrations, and an Appendix containing the Statistics of the Hospital for the last eleven years. London: J. & A. Churchill. 1901. Price 8s. 6d.

IN this edition the author has wisely abandoned the plan of serving both midwife and medical student, and has expanded his text to suit the latter. The merits which we previously pointed out are still evident, and the work has been brought well up to date. It is handy from its compactness and attractive from its local character.

Uterine Fibromyomata: Their Pathology, Diagnosis, and Treatment. By E. STANMORE BISHOP, F.R.C.S. (Eng.); President, Manchester Clinical Society, etc. With 49 illustrations. London: Rebman, Limited. 1901.

THE question of the mode of treatment of uterine fibroids is at present of great importance: the general practitioner wants to know what cases he is to send to the specialist for operation, and what he is to treat by the less radical measures which he can himself supply; the specialist wants to know which surgical procedure is the best if operation be decided upon, and under what circumstances electricity is to be preferred to the knife; and the patients want to know definitely what the probable course of events will be if they choose operation, or if they decide against any surgical interference. The present work is an attempt to answer some of these questions. According to Mr Stanmore Bishop, cases may be almost divided into those which require nothing, and those which require electrical or surgical interference. If the tumour cause no symptoms of any moment, masterly inactivity is the right treatment; if it cause symptoms, then electricity or operation is called for, and more

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often the latter than the former. The author thinks gravely of the risks of fibroids, he believes little of the "elusive" menopause, and he esteems highly hysterectomy, and specially panhysterectomy. His work contains a great mass of facts which seem to show that there are few bad after-results from well performed hysterectomies. There is, perhaps, too much special pleading for operative interference, but if this be allowed for, the book may be read and consulted with very considerable profit. It is beautifully illustrated.

Modern Obstetrics, General and Operative. By W. A. NEWMAN DORLAND, A.M., M.D., Assistant Demonstrator of Obstetrics, University of Pennsylvania, etc. Pp. 797, with 201 illustrations. Second edition, revised and enlarged. London and Philadelphia: W. B. Saunders & Co. 1901.

THIS volume gives a fairly adequate account of the present position of obstetric theory and practice, but its judgments are not very keenly critical. Inaccuracy of diction such as permits the author to describe capsicum plaster as sedative, and to direct the bowels to be kept patulous, is disappointing in the author of a medical dictionary, and it is to be hoped that the practice of blistering in œdema during pregnancy is less common in America than its repeated recommendation here would lead us to think. It would improve a future edition to use fewer borrowed illustrations.

Atlas and Epitome of Special Pathologic Histology. By Docent Dr HERMANN DÜRCK, Assistant in the Pathologic Institute; Prosector to the Municipal Hospital L. I. in Munich. Authorised translation from the German. Edited by LUDVIG HEKTOEN, M.D. Circulatory Organs, Respiratory Organs, Gastro-Intestinal Tract. London: W. B. Saunders & Co. 1900. Price 13s.

THIS little hand-atlas is in many ways like the others of the series, deserving of high recommendation. This volume deals with the circulatory and respiratory organs and the gastro-intestinal tract. In a subject such as pathological histology, a large amount of illustration is especially useful, and in this volume there are 130 coloured illustrations on 62 lithographic plates. They are drawn from preparations, many of which are very accurate; others however are merely diagrams. In a few places the illustrations are misleading—as for instance in the representation of grey hepatization of the lung, where well-filled blood-vessels and capillaries are depicted in the field. There is also the usual confusion between atheroma and arteriosclerosis. The letterpress is necessarily slight.

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The Commonwealth of Cells. Some popular essays on Human Physiology. By H. G. F. SPURRELL, B.A. Oxon. Crown 8vo, pp. 126, with 67 illustrations. London: Baillière, Tindall & Cox. 1901. Price 2s. 6d. net.

IT would seem that the general public take an intense delight in matters physiological to judge by the number of so-called popular books on this science which issue from the press. One almost hesitates to take up a fresh one lest he should find it, like too many of its predecessors, merely a sketchy outline of the science of physiology adapted to the needs of the higher forms in schools.

We can congratulate Mr Spurrell, however, in having written an eminently readable book—not suited certainly for schoolboys, but for educated men and women who are non-medical but interested in the general principles of physiology rather than with the details which are so often repellant. The work is made up of essays dealing with such subjects as Living Matter, Chemistry of the Body, Mechanics and Physics of the Body, the Nervous System and The Body. The subject matter of each is most interestingly written and the reader is carried right through a book which he merely intended to scan. We cordially agree with the author when, in speaking of the food elements, he says that "people who intend doing extra physical work should take extra sugary food rather than extra proteid . . . our athletes now follow the same principle"—how different from the old regime of raw beef steaks. There is, to us, a novel statement made (on page 23) that saliva on leaving the gland does not contain the ferment necessary to effect the change of starch into sugar until it has been subjected to the action of putrefactive bacteria, swarms of which are found however in the mouth. How does this agree with experiments which show that animals can live in perfect health although absolutely free from organisms either in the mouth or in the intestinal canal? The pages concerned with the electrification of muscles seem rather beyond general principles of physiology.

The diagrams are the least satisfactory part of the book. We are pleased to see that the volume has been prompted by that indefatigable worker, Dr Gustav Mann, to whom it has been dedicated by the author.

Selected Researches in Pathology. By ALEX. GUNN AULD, M.D., M.R.C.P. Author of "The Pathological Histology of Bronchial Affections, Pneumonia and Fibroid Pneumonia." With illustrations. London: J. & A. Churchill, 7 Great Marlborough Street. 1901.

THE practice which Dr Auld has adopted of publishing in convenient book form a selection of his researches in pathology is one to be highly commended. The subjects of investigation are all of practical value and general interest as the headings of the various chapters indicate—Emphysema, Pneumonia, Bright's Disease, Hæmatogenous Jaundice, Addison's Disease, Atheroma, Aneurism. On each of them the author has something worth saying, and he says it well. It is not always possible to accede to the propositions which he formulates, but it is impossible not

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to admire the ingenuity of the experimental work with which they are reinforced, and the acumen with which he presents his data. Where all are suggestive, it is not easy to select articles for special notice. That on Pneumonia is disappointing, in so far as the author has failed in his endeavours to establish immunity, but his explanation of the failure is most ingenious. To the literature of Hæmatogenous Jaundice and of Addison's Disease, he renders valuable though controversial contributions. The articles on Atheroma and on Aneurism derive special interest from having been written conjointly with the late Professor Coats.

Tumours, Innocent and Malignant: Their Clinical Features and Appropriate Treatment. By J. BLAND SUTTON, Surgeon to the Chelsea Hospital for Women, Assistant Surgeon to the Middlesex Hospital, London. New edition. With over 300 engravings. Cassell & Co., Ltd., London, Paris, New York, and Melbourne. 1901.

THE second edition of Dr Bland Sutton's well-known monograph on Tumours will be read with interest and profit by all who are interested in this branch of pathology, either from the clinical or from the more scientific point of view. Few indeed are the forms of new growth here considered of which the author fails to treat in a most suggestive manner. In two respects his book is pre-eminent among descriptive works on tumours: (1) the wealth of clinical experience, and (2) the wide range of comparative pathology which the author can command. It does not fall to the lot of many men to have to deal with so many forms of tumour growth as are here described from an intimate knowledge of their clinical aspects and naked eye appearances. The excellent manner in which the author has marshalled his host of facts, and the care with which he has followed up the subsequent history of his cases further enhance the value of his work. But the domain of Oncology which he has particularly made his own is that concerned with comparative pathology. The genesis of many peculiar abnormalities in man becomes somewhat less obscure when certain homologous conditions in the lower animals are taken into consideration, and Mr Sutton's treatment of this subject is perhaps the most striking and characteristic part of the book. Obviously it is the outcome of patient research and extensive knowledge, and, as a contribution to the pathogenesis of tumours and allied conditions, it is of great scientific interest and value. Among the more

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suggestive and instructive chapters are those which treat of Odontomes and of Dermoids. An excellent series of illustrations is added, dealing with certain clinical features, naked-eye appearances, and points in the comparative pathology of tumours.

It is much to be regretted, however, that a work of such high order should be so defective in histological description, and nowhere is this more apparent than in the long series of chapters, otherwise most instructive, devoted to epithelial new growths. Among other things, the author very properly lays more stress on the essential similarity of all forms of cancer than on the differences between them. He says that the terms scirrhous, colloid, and medullary or encephaloid have dominated the minds of surgeons, and hindered progress long enough. But it is one thing to be dominated by these terms; it is quite another thing to ignore the important characteristics that underlie their use. His further statement that the term cancer is employed by him in a sense equivalent to malignant adenoma, illustrates the misleading position which he is compelled by too uncompromising an attitude to adopt. Exception might be taken to many other statements regarding microscopic structure, but it is sufficient to say that this is the only weak point in a book of unusual interest and worth. One cannot seriously object when the author declines to enter upon any discussion of the ætiology of tumour growth on the ground that the causes are unknown.

"Golden Rules for Diseases of Children." By GEORGE CARPENTER, M.D. (Lond.), M.R.C.P. "Golden Rules" Series, No. XI. Bristol: John Wright & Co. 1901. Price 1s.

THIS is an attempt to present the main rules for the diagnosis and treatment of disease in children in such language as we use in framing telegraphic messages. While their very brevity makes many of the statements in it easy to remember, it renders not a few of them difficult to accept without qualification. Thus we are told that "acids are irritating to the infantile stomach." Surely this is not the whole truth.

It may truly be said, however, that the information given is generally correct, well chosen and suggestive—obviously the outcome of wide experience and careful thought; and Dr Carpenter may be congratulated on having filled the very small space at his disposal with a large amount of useful and often interesting information.

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The Child: His Nature and Nurture. By W. B. DRUMMOND (The Temple Primers). Pp. 148. London: J. M. Dent & Co.

DR DRUMMOND has added a clear and interesting volume to this pretty and useful series. It is well written and sensible, and in both the descriptive and practical parts may be taken as a fairly trustworthy guide. For those new to Child Study it will form a good introduction, attractive in itself, and by a representative bibliography tempting to further study. Parents and teachers will find in it much information of practical value tersely expressed and compactly arranged.

Our Baby: for Mothers and Nurses. By Mrs LANGTON HEWER. Seventh edition, revised. Post 8vo, pp. 154. Bristol: John Wright & Co. 1901. Price 1s. 6d.

THIS is an excellent little book of its kind and calculated to be most interesting reading for the young mothers and nurses for whom it is intended. As it has within a few years reached its seventh edition, it seems scarcely necessary to say that it is clearly and attractively written. We have pleasure in saying also that the information which it gives is thoroughly trustworthy, and its advice judicious and in accordance with common sense.

Diseases of the Digestive Organs in Infancy and Childhood. By LOUIS STARR, M.D. Third edition. London: Rebman, Limited. Price 12s. 6d. net.

IN this volume Professor Starr offers to the medical practitioner a most useful guide in that most important branch of general practice, diseases of the digestive organs of children. In the preparation of the third edition the work has been very completely revised, new matter has been introduced to bring it up to date, and other extensive changes have been made. The subjects now included are a full description of the feeding and general management of children and of diseases produced by imperfect nutrition, and short description of diseases of the digestive organs, including those of the mouth, throat, stomach, intestines, glands, liver, and peritoneum. The shorter descriptions are succinct, in all cases the pathology symptoms and treatment are given. The chapter on feeding is for the Scottish practitioner instructive reading, as it contains a good description of the most recent American ideas on that subject. The author is a strong partisan for sterilized modified

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milk feeding; he strongly disapproves, probably with insufficient reason, of unmodified milk; and also disapproves of "laboratory milk," such as is supplied by the "Walker-Gordon Laboratory," and similar institutions. The "laboratory milk" referred to is a mixture of cream, separated milk, milk sugar, lime water, and sterilized water, so mixed as to contain the food principles in the same proportion as in human milk; it is sterilized and bottled in the laboratory, and delivered ready for use. His argument against it seems very conclusive; it is: "Since the establishment of a milk laboratory in Philadelphia, I have thoroughly tested this method of artificial feeding, with very unsatisfactory results. Of a large number of infants so fed there were a few that thrived under the exclusive use of percentage milk, from shortly after birth, up to the time of beginning a mixed diet; a larger class in which the method was partially satisfactory; and a much larger one in which it was quite unsatisfactory. The instances of the totally unsatisfactory group were by far the most numerous, and in it in my own experience may be placed the vast majority of infants fed upon laboratory milk after the first eight weeks of life. The disorders observed in my cases were in some instances infantile scurvy, but most frequently acute gastro-intestinal catarrh, indicated by pyrexia, vomiting, and diarrhœa, with the expulsion of curds and greenish mucus, or large quantities of greenish serum."

The Care and Feeding of Children; a Catechism for the use of Mothers and Children's Nurses. By L. EMMETT HOLT, M.D., Professor of Diseases of Children in the New York Polyclinic, etc. Second edition, revised and enlarged. London: Henry Kimpton. 1901.

IT is interesting to learn from this little book the nature, form, and scope of the instruction which such an acknowledged authority as Dr Emmett Holt regards as suitable for mothers and nursery-maids. The instruction is here given by means of questions and answers which are worded in an admirably plain and practical manner, and cover a great variety of nursery topics.

To begin with, we find discussed the infant's Bath and Clothing, his Nursery, Airing, Development in Weight and Length, Dentition, Nursing and Weaning. The Feeding of Children at different periods of life is then dealt with, and many valuable hints on this matter are given. The third and

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last chapter includes the consideration of such elementary facts of nursery physiology, pathology, materia medica, and hygiene as may be thought to lie within the sphere of the mother and nurse. Here also we find brief references to thumb-sucking, bed-wetting, and masturbation, which are classed as bad habits of the child, and also to the kissing of and playing with babies, which Dr Holt regards sternly as among the bad habits of parents.

While we are not prepared to endorse every word in this excellent little catechism, we know no similar work, even of twice its size, which contains so much trustworthy practical information in such an easily intelligible form. We fear that there are not very many nursery-maids in this country of sufficiently trained intelligence to appreciate its value. We venture to think, however, that there are few who have much to do with children, whether as mothers, nurses, or medical men, who will not find instruction as well as interest in its suggestive pages.

Directions for Class Work in Practical Physiology, Elementary Physiology of Muscle and Nerve and of Vascular and Nervous Systems. By Professor SCHÄFER, Professor of Physiology in the University of Edinburgh. London: Longmans, Green & Co. Price 3s. net.

PROFESSOR SCHÄFER explains in a preface that this small work has been produced for the convenience of students of his practical class, and expresses a hope that it may prove useful to other teachers and their students. The subject matter while being of great importance to the student of physiology is not of much importance to the medical practitioner, as the greater part is a description of the various electric and other recording apparatuses which are found in a physiological laboratory, but which are not yet found in the consulting-room of the practitioner. The book is clearly written and will doubtless be a boon to the student of the author's practical class.

Lessons in Elementary Physiology. By the late THOMAS H. HUXLEY, LL.D., F.R.S. Small 8vo, pp. 611. Fifth edition. London: Macmillan & Co., Ltd. 1900. Price 4s. 6d.

IT is delightful to see again this friend of our youth, and to find that it has been given to Sir Michael Foster and Dr Lea to

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make it also a worthy companion of our riper years. The form of the book has remained unaltered, and though the advance of the science since 1896, when the last revision took place, has rendered necessary many changes and additions, these have been made with a reverent hand, and one still, in reading it, feels the charm which the master imparted to it. It is no small tribute to his genius that a book, first published in 1866, should be alive and useful to-day.

Text-book of Histology. By Dr PHILIPP STÖHR, Professor of Anatomy in the University of Würzburg. Translated by Dr EMMA L. BILSTEIN; edited, with additions, by Dr ALFRED SCHAPER, Professor of Anatomy in the University of Breslau. Third American from Eighth German edition. 8vo, pp. 432, 301 illustrations. London: Rebman, Ltd. 1901. Price 14s. net.

A Text-book of Histology. By Drs BÖHM and DAVIDOFF, of the Anatomical Institute, Munich. Translated by Dr HERBERT H. CUSHING; edited, with additions, by Dr CARL G. HUBER, Junior Professor of Anatomy, University of Michigan. Translated from the Second Revised German edition. 8vo, pp. 501, 351 illustrations. London: W. B. Saunders & Co. 1900. Price 15s. net.

WE have striven in vain to make up our minds which of these text-books is the better. They are both very good, and they are both better than the German originals, though those are the work of men known everywhere—Stöhr, both as a man of research and a teacher; the other two as teachers and writers. Each has features in which it excels—Stöhr's book in the shortness, simplicity, and yet sufficient fulness of its descriptions, both of structure and of microscopic technique, and in the way in which a constant relation is kept up between the preparation of an object, its examination and description, and its illustration; Böhm and Davidoff's in the fulness and minuteness of its description both of organs and methods, and in the number of its illustrations, and perhaps also of their quality. Stöhr is the book for junior students, Böhm and Davidoff rather for seniors. In both books one is delighted to miss the time-worn figures, made in pre-historic times, which are still too often found in English text-books, and to see the figures representing preparations made by the most recent methods.

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An Introduction to the Bacteriological Examination of Water. By W. H. HORROCKS, M.B., B.Sc. London: J. & A. Churchill.

THIS book supplies a felt want to those engaged in public health work, and especially in the investigation of outbreaks of infectious disease suspected of originating in infected water.

It has long been recognised that a chemical analysis of water alone is insufficient evidence of its suitability for domestic purposes. It is of course admitted that this is a valuable means of obtaining information of various impurities and dangers, and that while alone it is in many cases sufficient to enable one to condemn any particular water as unsuitable, still the converse by no means holds good—waters of chemical purity having frequently been so polluted that their use has given rise to serious outbreaks of disease. This book aims at describing the methods by which the pathogenic organisms to which such outbreaks are due may be detected.

After describing the method of the quantitative estimate of the micro-organism in water by the usual methods of plate cultivation, the author goes on to describe the bacteria which are found in pure water—those found in sewage and rarely in pure water—and those which give rise to specific diseases in human beings through the agency of drinking water.

The subject is a most difficult and complicated one, but the author describes in a very lucid manner the methods by which the ordinary pathogenic organisms may be isolated and identified.

The work is well illustrated, and should prove of great service to those engaged in investigations of this nature.

The Sanitary Inspector's Handbook. By ALBERT TAYLOR, Member of the Sanitary Institute, etc. Third edition. Crown 8vo, pp. 408. London: H. K. Lewis. 1901. Price 6s.

THIS is a work which appeals to Sanitary Inspectors and others interested in Public Health work, and that it has proved its value is shown by the present third edition. The author gives a useful alphabetical synopsis of the Public Health (London) Act, 1891, with the corresponding sections of the Public Health Act, 1875, and its Amendments, and with the Public Health (Scotland) Act of 1897.

All the varied duties of the Sanitary Inspector are carefully given, and instructions laid down as to how to keep correct notes and books regarding his visits and reports. A good account of meat inspection is also incorporated.

The volume will prove of value to the Medical Officer of Health as well as to his assistants, the Sanitary Inspectors. It is well written, and so far as we have found, free from mistakes.

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The Surgical Anatomy and Operative Surgery of the Middle Ear. By A. BROCA, Surgeon to the Trousseau Hospital, etc. etc. Translated by MACLEOD YEARSLEY, F.R.C.S., Surgeon to the Royal Ear Hospital, etc. London: Rebman, Limited.

THIS little book is divided into three sections—the first dealing with the anatomy of the parts concerned in mastoid disease; the second giving the author's views as to operative measures in that condition; while the third part is designated the Atlas, and is chiefly composed of photographs and drawings of the parts concerned.

In the first part the author gives a concise, and for the most part, a fairly lucid account of the temporal bone, or rather of those parts particularly concerned with middle ear disease. He lays special stress on the spine of Henle, which, he considers, after the age of ten years may be considered as constantly present, and a reliable guide to the mastoid antrum. In the young child its place is taken by the cribriform or "spongy spot," or, as the translator prefers to call it, the "supramastoid fossa." He also notes its relative change of position during the early years of life. In connection with the spine of Henle, the author quotes Lenoir as having failed to find it present only once in 200 cases.

Broca divides the cells into "squamous," "mastoid," and "petrous": but the description of these cells cannot be said to be clear, at any rate in the translated work.

Contrary to common opinion it is asserted that air cells in the mastoid, other than the mastoid antrum, are nearly always present at birth, and can be demonstrated, as Faraboeuf has shown, by filling the tympanum with mercury and shaking the bone, when the metal finds its way into the cells behind the tympanic ring, and can be seen there on section of the bone.

The depth of the antrum from the surface of the bone is said to vary from 2 to 3 millimetres in the child to as much as from 15 to 29 millimetres in old people, and therefore Broca believes that a deep antrum may be missed if the rules laid down by various authors are followed; thus Politzer is said to put the limit at from 5 to 6 mm., Noltenius at 20 mm., and Schwartze and Chipault at 25 mm. The author gives precise instruction as to the exact position of the facial nerve relatively to the aditus, and how to avoid damaging the nerve in the course of operation. He is of opinion that accidental wounding of the lateral sinus is always due to the clumsiness of the operator; and here disagrees with Lake and others, who believe that in many cases the accident is due to an abnormality in the position

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of the sinus. In the author's description of the operation of opening the mastoid, the position of the square of cortex raised is placed so far back, that his statement that he has never accidentally wounded the sinus is all the more noteworthy. Indeed, if one were to follow his advice in text and diagram closely, it is hard to see how one could avoid opening it pretty frequently. It must be said, however, that the descriptions are often hard to follow, sometimes apparently from the use of inappropriate words by the translator—thus he says at one place, "the chisel must be directed above and within," when it seems that he means that it must be directed "upwards and inwards," and so forth throughout the book.

The account of operative procedures is good as far as it goes, but limited: thus no notice, for example, is taken of the various methods (Macewan, Ballance, etc.) for skin grafting the wound.

The author approves of opening the middle and posterior fossæ of the skull by the mastoid route, and does not appear to limit himself to this method in those cases where there are perforating bony lesions leading to the supposed site of the intracranial suppuration.

The Atlas is in two parts—(1) photographs from sections showing details in development of the temporal bone, by Ch. Millet. These are indefinite and not of much service; (2) drawings by Lenoir to illustrate stages in the various operations. These are clear and occasionally instructive.

The Pharmacopœia of the Hospital for Diseases of the Throat, Nose, and Ear. Edited by H. LAMBERT LACK, M.D., and CHARLES A. PARKER, F.R.C.S.Ed., Surgeons to the Hospital. Sixth edition. London: J. & A. Churchill. 1901. Price 2s. 6d.

WITHIN the space of about seventy small pages will be found the formulæ in use at the London Throat Hospital (Golden Square). The present edition has been brought up to date by the addition of certain recently-introduced drugs, and by the omission of certain formulæ rendered obsolete by improved methods of treatment.

The editors have done their work with care and accuracy, but we hardly think the little work will meet with a great demand outside its own hospital.

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THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

THE RELATIVE INEFFICACY OF CACODYLATES AS THERAPEUTIC AGENTS[1]

By THOMAS R. FRASER, M.D., Pres. R.C.P.E.,
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COMPOUNDS of cacodylic acid, $As(CH_3)_2O(OH)$, have recently been introduced into therapeutics as preparations of arsenic having certain advantages over the ordinarily employed medicinal compounds of that element. There has already been accumulated a considerable body of clinical experience regarding several of them, and especially regarding the cacodylate of soda and the cacodylate of iron.

The former of these compounds has been administered in nearly all affections in which it is customary to employ the ordinary compounds of arsenic, including anæmia, leucæmia, pseudo-leucæmia, many forms of skin disease, leprosy, lymphadenitis, phthisis, bronchitis, chorea and neurasthenia.

Almost without exception, those who have made observations with cacodylates have expressed themselves in the most favourable terms in regard to their value.

In a discussion at the Society of Hospital Physicians of Paris, Dalché (1) stated that of nine cases of pulmonary tuberculosis treated with cacodylate of sodium, subcutaneously injected, three were undeniably cured; four were greatly improved, having gained in weight and muscular strength; two showed no results; and two, which were very advanced cases, became worse.

Dr Anelli (2) has described a remarkable success in a case

[1] Communicated to the Medico-Chirurgical Society on 5th March 1902.

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of aggravated pulmonary tuberculosis, in which, as he had failed to obtain success with subcutaneous administration, he injected ·8 grain daily introvenously, and almost immediately thereafter improvement commenced, with a notable reduction in the temperature and respiratory movements; while at the end of three weeks the pulse-rate had fallen from 96 to from 80 to 85 per minute, the night sweats had sensibly diminished, the number of tubercle bacilli and staphylococci in the sputum had become greatly lessened, and elastic fibres had altogether disappeared.

Rocaz (3) treated eighty cases of tuberculosis, and found in pulmonary tuberculosis, excepting advanced cases, that cough, night sweats and pyrexia disappeared, and the body weight increased. He, however, makes the extraordinary statement that in cases of "latent, suspected or threatened tuberculosis, cacodyl triumphs." He asserts that one case of tubercular peritonitis was healed and three cases were improved.

Gallois (4), who had used cacodylate of sodium by mouth administration in a large number of diseases, claims that it almost invariably increased appetite and augmented weight, and that the condition most favourably influenced was chronic bronchitis with asthmatic paroxysms occurring in elderly people. He had also obtained good results in scrofula and eczema, but not in psoriasis. In his cases neither intolerance nor poisonous symptoms followed mouth administration. This freedom from inconvenient effects during mouth administration was also noted by Quelmé (5) in a number of cases of scrofula, when care was taken to interrupt the administration occasionally.

Ewart's (6) experience led him to conclude that cacodylates can be administered for a long time in moderate doses, and exert their "brilliant" effects in all cases where arsenic is indicated, especially in chorea, malaria, pernicious anæmia and Basedow's disease; also in the hectic fever and the cough and expectoration of phthisis, and in all nervous exhaustions.

Burlureaux (7) met with gratifying results in neurasthenia, chlorosis and psoriasis, but with little success in tuberculosis. In the former conditions, strength, appetite and weight were increased, toxic dyspepsia was cured, menstruation returned, and the growth of hair was stimulated.

Bormans (8) thus summarises his experience of the use of

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cacodylate of soda in anæmia. It is a remedy which may be tolerated in much larger doses than those usually given, and therefore is valuable in all cases where large doses of arsenic are indicated, as in anæmia and chlorosis, especially where iron is not tolerated.

Danlos (9) obtained good results in pseudo-leucæmia and psoriasis ; and Reynaud (10) was induced by the success obtained in the latter disease, and in lupus erythematosus, cutaneous tuberculosis and sarcoma of the skin, to try cacodylate of soda in leprosy, by subcutaneous injections of one and one-and-a-half grain daily. He states that the cachectic phenomena disappeared, and the body weight increased, and that, in four out of six cases, there was rapid cicatrisation of open sores and even of phagedenic ulcerations.

From his experience of the rectal and subcutaneous injection of cacodylate of soda in leucæmia, anæmia, exophthalmic goitre, diabetes and early tuberculosis, Renaut (11) concludes that this compound is superior to the ordinary preparations of arsenic, especially because of its almost absolute non-toxicity.

Gautier (12) points out that although the salts of cacodylic acid were introduced for the treatment of tuberculosis, their use has now been extended with beneficial results to all emaciating diseases, to severe anæsthesia, all skin diseases, scrofula and syphilis. In cachexias, whatever be their nature, in neurasthenia and in conditions of general weakness, the beneficial effect is a very apparent one. They do not act in any special disease, but in all weakened conditions, and the success is all the more remarkable because it is free from risk. The daily quantity he recommends for subcutaneous injection is ·05 gramme, equivalent to ·37 grain of arsenium, or 51 minims of liquor arsenicalis. Gautier, who has done important work on the chemistry of cacodylic compounds, believes that they act through the intermediary of the thyroid gland, which he has shown to be the only structure in the body where arsenic is normally present in considerable quantity. It is there united with iodine, and he affirms that the simultaneous administration of iodine increases the action of cacodylic compounds.

Cacodylate of sodium has been administered by the stomach and rectum, by subcutaneous injection, and occasionally by rectal and introvenous injection. In the first case, the dose *per*

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diem has usually been 0·1 gramme, or 1·5 grain, equivalent to so large a quantity as 103 minims of liquor arsenicalis, but one gramme (15 grains) has also been given; while for subcutaneous injection, ·05 and ·1 gramme, or three-fourths of a grain and one grain-and-a-half, respectively, have been the doses most generally employed; although so enormous a dose as one gramme-and-a-half has also been injected with perfect impunity (12).

In some instances, the administration by subcutaneous injection has been continued, with or without interruptions, for so long periods as two, three, four, and six months, and even for two years, without the slightest symptom of poisoning, and although five-sixths of a grain of cacodylate of soda has at times happened to directly enter the veins during the injections. In the prolonged administration of the less frequently employed cacodylate of magnesium, so large a quantity as 43 grammes, or about 662 grains, representing about 300 grains of arsenium or 86 fluid ounces of liquor arsenicalis, has been received by a patient by subcutaneous injection in a period of three months, without any manifestation of arsenicism (7).

As one gramme of cacodylate of sodium contains 7·44 grains of arsenium, and represents 1030 minims or more than 2 fluid ounces of liquor arsenicalis, it is apparent that by using cacodylic compounds, extremely large quantities of arsenium may be introduced into the body without producing dangerous or even remarkably inconvenient effects. The claim is made, however, that the large introduction of arsenic that can thus be effected is of much advantage to therapeutics, and renders the cacodylic compounds more valuable than the compounds of arsenic that have hitherto been generally used in medicine.

It appeared to me that if cacodylic compounds are incapable of causing toxic effects when given in quantities greatly superior to the quantities of ordinarily employed arsenical compounds, they must, to a corresponding degree, be pharmacologically inert and therapeutically inefficient. In order to test this opinion, I have given cacodylate of soda and cacodylate of iron in cases of several of those diseases in which arsenic is frequently administered.

Chorea.—Taking first the disease, chorea, in which the value of the ordinary arsenical preparations has been abundantly

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demonstrated, cacodylate of soda was given to three patients with the following results:—

CASE I. Mona Y., æt. 9, has been ill for ten days before admission into the Royal Infirmary. After admission she remained untreated for four days before cacodylate of sodium was administered. The cacodylate treatment lasted for forty-five days, beginning with three-fourths of a grain (representing ·36 grain of arsenium), and gradually increasing to four grains and a half (representing 2·16 grains arsenium) *per diem*. No improvement occurred. The patient was then treated with liquor arsenicalis for ten days, the daily quantity being at first 9 minims (representing ·063 grain of arsenium), and latterly 12 minims (representing ·084 grain of arsenium). There was marked improvement in seven days, and the choreic movements had entirely disappeared on the tenth day of treatment with liquor arsenicalis.

CASE II. John D., æt. 9—*Hemichorea*—had been ill for four weeks, and received no treatment for chorea during the first eight days after entering the Royal Infirmary, but in this time the symptoms had considerably improved. He received for twenty-three days from 1 to 9 grains of cacodylate of soda daily (representing from ·48 to 4·32 grains of arsenium), when the administration was interrupted for five days by the occurrence of diarrhœa. On being resumed, cacodylate of sodium was given in daily quantities of from three-fourths of a grain to one grain-and-a-half for three days, but was then stopped on account of a return of diarrhœa. The choreic symptoms continued to lessen during the administration of cacodylate of sodium, and the patient had so far improved in thirty-one days, that no further medicinal treatment was required.

CASE III. William R., æt. 12, had been ill for ten days. On the day following his admission into hospital, cacodylate of sodium was administered, beginning with one grain-and-a-half, and slowly increasing to ten grains-and-a-half daily (representing from ·72 to 5 grains of arsenium). Scarcely any improvement was observed until twenty-eight days, but it was only slight, and had not materially advanced at the end of fifty-

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two days. Liquor arsenicalis was now substituted for cacodylate of soda, the beginning dose *per diem* being 6 minims (representing ·042 grain of arsenium), which was gradually increased to 12 minims (representing ·084 grain arsenium. In seven days there was marked improvement, and recovery was established in twenty-one days.

In the next case of chorea, which was admitted at about the same time as the last, the treatment was with liquor arsenicalis only.

CASE IV. Robina E., æt. 15, had been ill for six months. On the day following admission into hospital, she was treated with liquor arsenicalis, the doses being between 6 and 24 minims daily (representing ·048 and ·168 grain of arsenium), and this treatment was continued for thirty-two days. An improvement in the symptoms was noted on the seventh day of treatment with liquor arsenicalis, it had become very pronounced on the eleventh day, and entire recovery had been established by the twenty-third day.

In these cases mouth administration was followed. In the second case much disorder of the alimentary canal was produced, and in each patient treated with cacodylate of soda a strong garlic-like odour was developed, whereas the patient treated with only liquor arsenicalis manifested no symptom whatever of arsenicism, although very considerable doses of arsenic were given.

Eczema.—Since these observations with cacodylate had been begun, I have had an opportunity of testing their effects in only one case of skin disease.

CASE V. The patient was a young unmarried woman, Esther B., æt. 24, suffering from a second attack of acute eczema, which involved the whole surface of the body except the scalp. During the seventeen days preceding the administration of cacodylate of soda, material improvement, with disappearance of the more acute characters of the eczema, occurred under regulation of diet, purgatives, and exalgine. Cacodylate of soda was given for twenty-three days, then intermitted, because of nausea and vomiting, for four days, and

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again given for other two days. The daily quantity, administered by the mouth, was at first 3 grains (representing 1·44 grain of arsenium), and this was gradually increased to 15 grains (representing 7·2 grains of arsenium). The improvement in the condition of skin slowly proceeded, and the eczema had disappeared twenty-nine days after the treatment with cacodylate of soda had been commenced. A strong garlic odour was developed after the third dose had been taken, and persistent nausea, with distaste for food and with occasional vomiting, occurred at the end of the third week. Although the administration had to be suspended because of the latter symptoms, it is of interest to note that at no time were there developed the most characteristic of the symptoms of arsenicism, such as conjunctival congestion, swelling of the eyelids and neuritis. In this as in other of the cases, it appeared to be indicated that the nausea, vomiting and anorexia were caused by the cacodylic oxide, whose odour was so unpleasantly conspicuous, rather than by any active arsenic liberated from the cacodylate.

Leucæmia.—One case of spleno-medullary leucæmia was treated with cacodylate of soda.

CASE VI. The patient, Henry C., æt. 40, was treated on two periods with cacodylate of soda given by the mouth. In the first period of twelve days, he received from 1 to 3 grains (representing ·48 and 1·44 grain of arsenium). At the beginning of treatment, the hæmocytes were 3,200,000 and the leucocytes 250,000 per cm., and the percentage of hæmoglobin was 42. At the end of the twelve days, the hæmocytes were 3,000,000 and the leucocytes 250,000 per cm., and the percentage of hæmoglobin was 39.

The occurrence of diarrhœa led to the administration of the cacodylate being interrupted for forty-two days, when other remedies were given, but without improving the condition of the blood.

On the resumption of treatment with cacodylates, constituting the second period, the sodium salt was administered by the mouth for twenty days, at first in daily quantities of 1 grain, and latterly of 6 grains (representing ·48 and 2·8

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grains of arsenium). At the beginning of this second period, the hæmocytes were 2,200,000 and the leucocytes 282,000 per cm., and the percentage of hæmoglobin was 40. At the end of the twenty days, the hæmocytes were 2,500,000 and the leucocytes 340,000 per cm., and the percentage of hæmoglobin was 40.

This unfavourable result corresponds with the experience in leucæmia of Widal(13) and of Dalché(1), both of whom, however, state that the red blood corpuscles became increased in number.

Anæmia.—On the other hand, neither in this case nor in six cases of simple anæmia was any material increase produced in the hæmocytes. Even if cacodylates were effective preparations of arsenic, such an increase was not anticipated, for I had more than fifteen years ago definitely convinced myself that arsenical preparations are incapable of increasing either the red cells or the hæmoglobin in this disease. The administration, however, while it served to add to the evidence of this inability, supplied materials for the chemical determination of the fate of cacodylic compounds from the time of their introduction into the body to that of their elimination by the kidneys.

In the first five of the six cases of anæmia, cacodylate of soda was given by the mouth.

CASE VII. Nellie S., æt. 17. Treatment was begun two days after her admission to hospital, and was continued for twenty-one days, the initial dose of cacodylate of soda being ·5 grain (representing ·24 grain of arsenium), and the final maximal dose 3 grains (representing 1·4 grain of arsenium), each twenty-four hours. At the beginning of treatment, the hæmocytes numbered 3,000,000 per cm., and the percentage of hæmoglobin was 30. At the end of the twenty-one days, the hæmocytes numbered 3,500,000 per cm., and the percentage of hæmoglobin was 32. This trivial improvement in the quality of the blood is not more than frequently occurs in hospital when no effective medicinal treatment is employed. Immediately after suspending the administration of cacodylate of soda, this patient received ferrous chloride, first in doses of 2 grains and latterly of 4 grains, thrice daily. In sixteen days, the hæmo-

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cytes numbered 4,200,000 per cm., and the percentage of hæmoglobin was 62; and in twenty-five days, the hæmocytes numbered 4,600,000 per cm., while the percentage of hæmoglobin was 72.

CASE VIII. Marion M'L., æt. 19, was kept under observation in hospital for ten days before the administration of cacodylate of soda was begun. She received during forty-eight days daily quantities of from 1 grain to 18 grains (representing ·48 grain and 8·64 grains of arsenium). At the beginning of this treatment, the hæmocytes numbered 3,330,000 per cm., and the percentage of hæmoglobin was 32; at the end of the forty-eight days the hæmocytes numbered 3,430,000 per cm., and the percentage of hæmoglobin was still 32.

She then received ferrous chloride, commencing with 2 grains, which was soon increased to 4 grains, thrice daily. In twenty-one days, the hæmocytes numbered 5,500,000 per cm., and the percentage of hæmoglobin was 90.

CASE IX. Jane B., æt. 21. Nine days after her admission to hospital, treatment with cacodylate of soda was begun, and it was continued for forty-three days, the initial doses being ·75 grain (representing ·36 grain of arsenium), which was gradually raised to 15 grains (representing 7·2 grains of arsenium) *per diem*. When treatment was commenced, the hæmocytes numbered 4,000,000 per cm., and the percentage of hæmoglobin was 48. At the end of forty-three days, the hæmocytes numbered 4,800,000 per cm., and the percentage of hæmoglobin was still 48.

Ferrous chloride was now substituted for cacodylate of soda, the doses ranging from 2 grains to 4 grains thrice daily. In thirty-seven days, the hæmocytes numbered 5,500,000 per cm., and the percentage of hæmoglobin was 100.

CASE X. Mary R., æt. 18. After eight days of observation in hospital, this patient was treated for forty-four days with cacodylate of soda, in daily doses which ranged from 1 grain to 9 grains (representing ·48 grain and 4·3 grains of arsenium). When the treatment was begun, the hæmocytes numbered 3,660,000 per cm., and the percentage of the hæmo-

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globin was 42. At the end of forty-four days, the hæmocytes numbered 4,500,000 per cm., and the percentage of hæmoglobin was 44.

After an interval of eight days without any medicinal treatment, this patient received ferrous chloride in doses of from 2 to 4 grains thrice daily. In eighteen days thereafter, the hæmocytes numbered 5,000,000 per cm., and the percentage of hæmoglobin was 67; and in twenty-six days the number of hæmocytes was 5,200,000 per cm., and the percentage of hæmoglobin was 80.

CASE XI. Jeannie G., æt. 15, was kept under observation for eight days before treatment with cacodylate of soda was begun. During twenty-six days, she received from 3 to 12 grains daily (representing 1·4 grain and 5·7 grains respectively of arsenium). Before treatment, the hæmocytes numbered 3,400,000 per cm., and the percentage of hæmoglobin was 30. At the end of twenty-six days, the hæmocytes numbered 3,800,000 per cm., and the percentage of hæmoglobin was 30.

Ferrous chloride was then substituted for sodium cacodylate, in doses of 2 to 4 grains thrice daily. In thirty days, the number of hæmocytes was 4,650,000 per cm., and the percentage of hæmoglobin was 80.

In the next case, subcutaneous injection was substituted for mouth administration of the cacodylic salt, but the therapeutic result was equally unsatisfactory.

CASE XII. Annie A., æt. 16. After having been kept under observation for seventeen days, during which time the quality of the blood, especially in regard to the number of hæmocytes, improved steadily, this patient was treated for forty-five days with cacodylate of soda, which was subcutaneously injected in daily doses rising from ·166 grain to 12 grains (representing ·08 grain and 5·76 grains of arsenium). When the injections were commenced, the number of the hæmocytes was 4,800,000 per cm., and the percentage of hæmoglobin was 42. At the end of forty-five days the number of the hæmocytes was 5,170,000 per cm., and the percentage of hæmoglobin was 50.

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The injections of cacodylate of soda were now stopped, and ferrous chloride was administered by the mouth, the daily doses ranging from 6 to 12 grains. In twenty-seven days, the number of the hæmocytes was 5,320,000 per cm., and the percentage of hæmoglobin was 70; and in fifty days, the number of hæmocytes was 5,050,000 per cm., and the percentage of hæmoglobin was 94.

In this case, cacodylate of soda was well tolerated when subcutaneously injected. No gastric or intestinal disturbance was produced, and there were no symptoms of arsenical poisoning, although so enormous a dose was frequently given each day by subcutaneous injection as 12 grains, representing more than 5½ grains of arsenium, or 840 minims, or an ounce and three-quarters of liquor arsenicalis. Indeed, the only obvious result of the administration was the development of an alliaceous odour, which, however, did not become manifest until late in the treatment, when the larger doses were being injected.

The subcutaneous injection of a substance whose action depends on its diffusion throughout the body is one of the most certain methods for inducing that action. It has, however, failed to show that cacodylate of soda possesses any pharmacological or poisonous action even when very large doses of it are injected.

The cases in which cacodylate of soda has been given by mouth administration as well as by subcutaneous injection have also shown that this salt is unable to produce any definite therapeutic effect in anæmia.

On the other hand, when cacodylate of iron is administered in place of cacodylate of soda, anæmia is unmistakably benefited, as the following case exemplifies.

CASE XIII. Isabella M., æt. 22, was kept under observation for eleven days, during which time only slight improvement took place in the state of her blood. She then received cacodylate of iron by mouth administration in quantities at first of 3 grains (representing about 1·4 grain of arsenium and ·36 grain of iron), and latterly of 15 grains (representing about 7·2 grains of arsenium and 1·8 grain of iron), daily. When

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this treatment was begun the number of hæmocytes was 3,400,000 per cm., and the percentage of hæmoglobin was 37. Undoubted, although not rapid, improvement occurred. In thirty-six days the number of the hæmocytes was 4,550,000 per cm., and the percentage of hæmoglobin was 66; and in sixty-eight days these numbers had increased to 5,000,000 and 89, respectively. This salt of cacodylic acid was well tolerated, as the only inconvenience which it caused was a slight alliaceous odour that became apparent so early as the second day of treatment.

A similar success in anæmia with cacodylate of iron has been recorded by Gilbert and Lereboullet (14); but, apparently, they attribute the simultaneous increase of the hæmocytes and hæmoglobin to a combination of the action of arsenic with that of iron in this compound, believing that the increase of the hæmocytes is mainly caused by the arsenic, and of the hæmoglobin by the iron. This combination of therapeutic effects, however, is merely the ordinary result which follows the administration of any efficient compound of iron. It is illustrated in the following case of a patient who suffered from anæmia, and was treated only with ferrous chloride, at the same time as the patient whose case has last been described.

CASE XIV. Kate D., æt. 24, after having been under observation for seven days, was treated with ferrous chloride, in doses at first of 2 grains, and soon afterwards of 4 grains, thrice daily. When this treatment was begun, the number of the hæmocytes was 3,500,000 per cm., and the percentage of hæmoglobin was 39. In twenty-one days, the number of the hæmocytes was 4,200,000 per cm., and the percentage of hæmoglobin was 80; while in thirty-five days, the numbers were 4,600,000 and 88, respectively.

It thus appears that the arsenic in cacodylic acid and in its salts is almost inert when regarded either as a therapeutic or as a poisonous substance, but that when certain bases having therapeutic properties, such as iron, are united with cacodylic acid, these bases (for this has also been shown with mercury) are capable of producing their special curative effects.

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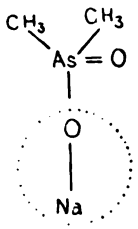
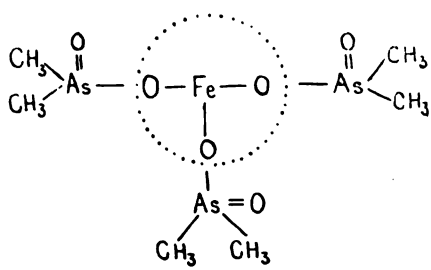
These results are rendered intelligible when the chemical properties of cacodylic acid and its compounds are considered. It is found, for example, that the well-known reactions of the ordinary arsenical compounds are not displayed by cacodylates, while the reactions of the bases referred to can readily be produced. Cacodylates, though arsenate compounds, fail to give the characteristic reactions of sodium arsenate, as with silver nitrate, zinc sulphate, and a mixture of ammonia, ammonium chloride and magnesium sulphate. In marked contrast with sodium arsenate, the cacodylate of soda also fails to produce a deposit of arsenium upon copper, when it is subjected to Reinsch's process.

On the other hand, cacodylate of iron gives the numerous ordinary reactions of all solutions of ferric compounds, as with hydrogen sulphide, potassium hydroxide, ferrocyanide of potassium and tannic acid. As contrasted with the iron, the arsenic is thus shown to be so firmly united with other elements in the cacodylic group as to be incapable of disassociation by chemical reagents of much greater activity than those which it could encounter in the living body. The following formulæ, illustrating the chemical constitution of the sodium and the iron cacodylate, may serve to explain how the disassociation of the basic sodium and iron may be effected, while the arsenic in the compound still remains so firmly united with methyl as to be incapable of forming any active arsenic ion :—



Sodium Cacodylate



Ferric Cacodylate

It is therefore suggested that when a cacodylate is administered the arsenic remains locked up in it, in so far as its pharmacological energies are concerned. The arsenic ion thus

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remains inert pharmacologically, and, if so, necessarily also therapeutically; and the arsenic probably passes through the body without undergoing disassociation from methyl.

In order to obtain evidence on the last point, the urine of several of the patients who were receiving cacodylates was examined chemically in regard to the presence and form of the arsenic contained in it. The analyses were undertaken by Dr Sillar, the Senior Assistant in my department, and by Dr Waters, lately one of the Assistants, to whom I have to acknowledge my indebtedness for the care and accuracy with which the laborious chemical analyses were conducted.

It had already been shown by Armand Gautier (15) that arsenic in certain organic combinations, such as in cacodylates, cannot be isolated by Marsh's process until the organic matter has been destroyed by a very prolonged oxidation process devised by him, in which nitric and sulphuric acids are successively employed, this preliminary oxidation-process alone occupying about three hours.

Selecting a few of the many analyses that were made, in order to obtain controls, two sets of analyses (*A* and *B*) were made.

A. Figure 1.—(*a*) 27 minims of a one per cent. solution of arsenious acid = ·055 grain of arsenious acid, was mixed with 200 c.c. of normal urine, and the mixture was Marshed,[1] with the result that a well-marked arsenium film was deposited on the sublimation tube. (*b*) ·05 grain of sodium cacodylate was dissolved in 200 c.c. of normal urine (= ·77 grain of arsenium), and on Marshing the solution a very slight yellowish deposit was obtained (probably not arsenic). (*c*) A similar solution of cacodylate of sodium was first oxidised by Gautier's process and then Marshed, with the result that a dense and abundant film of arsenium was deposited.

Arsenious acid dissolved in urine, therefore, gives up its arsenic when treated with Marsh's process without any pre-

[1] In all of these chemical analyses the Marshing was carried out with the modifications and details recommended by Gautier (*Annales de Chimie et Physique*, 5me Série, T. viii., 1876, p. 384). It is stated that by using these modifications of Marsh's process, the one-millionth part of a gramme of arsenic, in ordinary combinations, may be detected (*Bulletin Général de Thérapeutique*, T. 142, 1901, p. 583).

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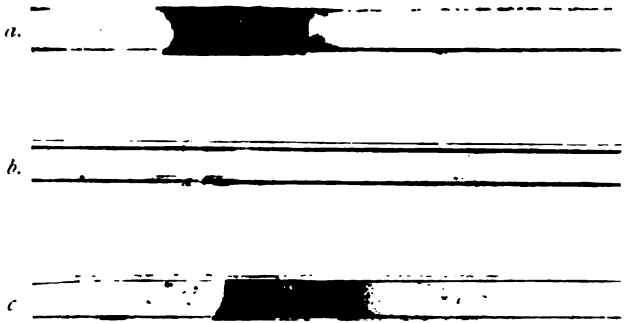
A. Fig 1.



B. Fig. 2.

C. Fig. 3.

D. Fig. 4.

E. Fig. 5.

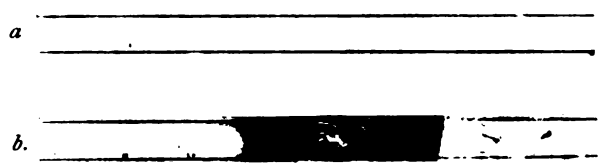


Plate IV.—To illustrate Professor Fraser's Article.

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liminary oxidation or destruction of the organic matter; whereas cacodylic acid fails to do so until its organic constituents have been destroyed by a very prolonged and elaborate process of oxidation.

B. In the following analyses, it is shown that the arsenic which is eliminated in the urine, when one of the usually administered preparations of arsenic, such as the liquor arsenicalis, has been taken by a patient, is not combined with other substances in such a way as to require oxidation of the urine before the presence of the arsenic can be revealed by Marsh's process (Figure 2).

(*a*) 200 c.c. of the urine of a patient, who had been taking liquor arsenicalis for several weeks, and was receiving 21 minims of the liquor daily at the time when the urine was collected, was concentrated and Marshed, with the result that an abundant deposit of arsenium was formed in the sublimation tube. (*b*) Another 200 c.c. of the urine of the same day was first oxidised by Gautier's method and then Marshed, and an equally abundant deposit was formed.

The condition of the arsenic in the urine of patients receiving sodium cacodylate was ascertained in several of the cases of anæmia which have been described, two of which may be referred to, the results having been the same in all the others.

C. Figure 3.—(*a*) While one of these patients (Case 12) was receiving 12 grains of cacodylate of soda in twenty-four hours, 200 c.c. of the urine was concentrated and Marshed; but only a slight coloration was obtained in the sublimation tube. (*b*) Other 200 c.c. of the patient's urine of the same day was subjected to Gautier's oxidation process before being Marshed, and a very dense deposit of arsenium was obtained, similar to that produced when a solution of cacodylate of sodium in water or in normal urine was oxidised before being Marshed.

D. Figure 4.—(*a*) The second patient (Case 10) was receiving 9 grains of sodium cacodylate in twenty-four hours, when 200 c.c. of the urine was subjected to concentration and Marshing. The result was a hardly visible stain on the sublimation tube. (*b*) When, however, other 200 c.c.

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of the same urine was oxidised by Gautier's process before being Marshed, a dense film of arsenium was deposited.

In view of the uncertainties in the demonstration of a therapeutic advantage having been gained by the administration of cacodylate of sodium in the case of eczema which was previously referred to (Case 5), the results of the analyses of the urine in that case are of some interest.

E. Figure 5.—(*a*) While the patient was taking 15 grains of cacodylate of sodium in twenty-four hours (the maximal quantity administered to this patient), 200 c.c. of the urine were concentrated and Marshed, but no film or even stain was produced. (*b*) When, however, other 200 c.c. of the urine of the same day was subjected to oxidation by Gautier's process and then Marshed, a very dense film of arsenium was deposited.

It is, therefore, extremely doubtful if the improvement and disappearance of the eczema in this case can be attributed to the arsenic contained in or derived from the cacodylate of soda. Bearing upon this, is the circumstance that, although reputed to be chemically pure, the cacodylate of soda administered to this patient had a distinctly alkaline reaction; and the patient was accordingly being treated with an alkali during the twenty-five days in which she received large doses of sodium cacodylate, besides being subjected to the conditions favourable to recovery that have already been mentioned.

I have not made any observations with cacodylates in pulmonary or other forms of tubercular disease, because of the great difficulty in them of instituting comparisons between the effects of different medicinal substances, and of the impossibility of arriving at trustworthy conclusions unless a very large number of cases is dealt with.

Clinical observations and chemical analyses, accordingly, agree in showing that when a salt of cacodylic acid is administered to a patient it is absorbed and is eliminated, but with the arsenic which it contains so firmly combined with the other cacodyl constituents, that it does not become disassociated, and is therefore incapable of forming any compound in the body that can produce the well-known pharmacological activities of the compounds of arsenic usually employed for therapeutic purposes.

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The compounds of cacodylic acid may thus be given in massive doses, and by them arsenic may be introduced into the body in quantities which are large, and even enormous, relatively to the quantities in the commonly used compounds of arsenic, in which this element, however, is not so stably fixed as to be incapable of forming new combinations which produce well-known and powerful effects. Cacodylates may be likened to certain of the cyanogen compounds, such as the ferro- and ferri-cyanides, in which cyanogen is also so locked up, that enormous quantities may be given without causing any cyanogen action, or any manifestation of the deadly energy of hydrocyanic acid and the majority of the cyanides.

While, however, cacodylates are to be regarded as useless therapeutic agents in so far as they are compounds of arsenic, it may, finally, be observed that they are likewise inconvenient substances to administer to patients. In the cases in which they were given by the mouth, disorders of the alimentary canal, such as nausea, vomiting and diarrhœa were often induced by them long before the maximal doses were attained, and in some cases these disagreeable effects required the administration to be suspended. Only when the administration was by subcutaneous injection, did they fail to be produced; but this is a method of administration which can rarely be continued over the long periods of time which are most usually required in the therapeutic use of arsenic preparations, while, if the subcutaneous injection of arsenic be desired, there already exists in sodium arsenate an equally non-irritating, and, at the same time, an entirely efficient arsenical preparation. Further, even by subcutaneous injection, as by mouth administration, the less important though highly obnoxious garlic-like odour of cacodylic oxide is frequently produced, and it constitutes an additional obstacle to the prolonged use of the cacodylates. These objections and inconveniences are, however, of secondary importance in view of the main result which has been arrived at, namely, that the compounds of cacodylic acid are of little or no value for producing the therapeutic effects for which arsenic is generally administered.

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SOME REMARKS ON THE ACTION OF PURGATIN[1]

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PURGATIN is a new purgative. It is the first synthetically-prepared substance allied to the active principles of aloes, cascara sagrada, rhubarb and senna which has been put upon the market. Hans Meyer,[2] it is true, suggested the use of tri-acetyl-aloin, but his suggestion, as far as I know, has never been adopted. Moreover, it can hardly be regarded as a synthetic substance, since aloin has never been prepared and at the time of Meyer's investigation but little of its constitution was known. Recently, however, Tschirch[3] has shown that it and the allied principles in cascara sagrada, rhubarb and senna, are derivatives of anthraquinone—are, in fact, oxy-methyl-anthraquinones—and that in all probability methyl-anthraquinone or anthraquinone is the active "eccoproticophor" group in these compounds. This, when combined with hydroxyls

[1] Read before the Forfarshire Medical Society, March 6th.

[2] *Arch. f. Exp. Path. u. Pharmak.* xxviii. p. 190 (1891).

[3] *Schweiz. Wochenschr. Pharm.* xxxvi. p. 237—*abst. Chem. Centralbl.* 1898, ii. p. 303; *Ber. Deutsch. Pharm. Ges.* viii. p. 174—*abst. Chem. Centralbl.* 1898, ii. p. 211.

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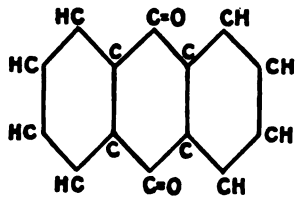
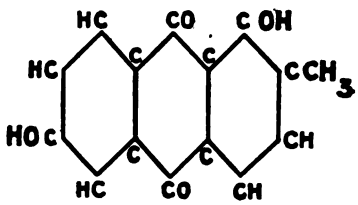
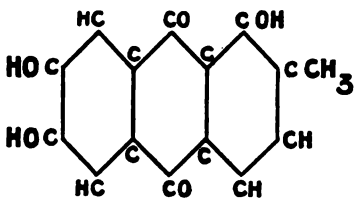
and possibly certain aliphatic groups, becomes purgative. Thus emodin,[1] found in aloes, cascara sagrada and similar drugs, is a tri-oxy-methyl-anthraquinone; aloe-xanthin, also found in aloes, is a tetra-oxy-methyl-anthraquinone; and chrysophanic acid, the main active ingredient of rhubarb, is a di-oxy-methyl-anthraquinone. These anthraquinone derivatives exist both free and combined in the form of esters (probably glucosides) in the plant; but they may also arise from the decomposition of other substances—emodin, for example, can be obtained from



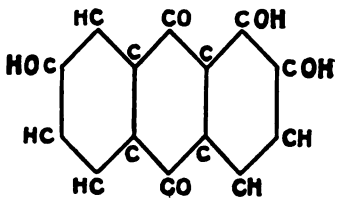
Anthraquinone.



Chrysophanic acid.
(probable formula)



Aloe-emodin.
(probable formula)



Anthra purpurin.

barbaloin—and, according to Tschirch, it is these other more complex bodies that are of most importance as purgative principles, since they are probably gradually decomposed during their passage down the intestine and thus induce a more regular action than the oxy-methyl-anthraquinones themselves. There is good evidence for this theory and it well explains the comparative inactivity of nataloin,[2] which is

[1] The emodins from the different drugs differ in some respects (melting-point, etc.). Fourteen possible tri-oxy-methyl-anthraquinones exist, so they are isomers.

[2] Esslemont, *Arch. f. Exp. Path. u. Pharmak.* xliii. p. 282 (1899); Tschirch and others. Meyer, *loc. cit.* pp. 191-194, seems to have found it moderately active.

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apparently not an anthraquinone derivative, as it gives no oxy-methyl-anthraquinone when decomposed as other aloins do.

With this theory in view, Vieth[1] investigated (on cats fed with a meat diet) a number of anthraquinone derivatives, and found that anthrapurpurin and flavopurpurin (both tri-oxy-anthraquinones) were the most active. Of the two, anthrapurpurin is the best. But as this in the pure form is somewhat irregular in action and tends to induce pain, a compound was sought for which would develop this substance gradually during its passage down the intestinal canal; and some of its esters were naturally examined. Of these the diacetate proved the most suitable, and it has now been put on the market under the name of "purgatin."[2]

This substance is a yellowish-brown powder, said to be microcrystalline and to melt about 175° C.[3] It is practically insoluble in cold water and dilute acids; slightly soluble in hot water, alcohol, ether, and chloroform; and fairly readily soluble in glacial acetic acid and xylol, from either of which it may be crystallised. In alkaline liquids it dissolves, producing a reddish-violet solution. It is tasteless and odourless. Chemically, it is said to be anthrapurpurin diacetate. The advantages claimed for it are its mild action, its purity, its tastelessness, its freedom from ill effects; being a pure substance, it is constant in action, and, on account of its tastelessness, is easily administered. The dose recommended is ·5-1 gramme (7½-15 grains). It may be taken suspended in water or as tablets; the latter contain ·3 gramme purgatin and ·2 gramme chocolate. It is stated that the urine becomes red after administration, and the patient must be informed of this.

Prior to the appearance of Vieth's paper, the substance was investigated therapeutically by Ewald[4] and Stadelmann,[5] and subsequently by Ebstein.[6] Ewald tried it in fifty cases of

[1] *Münch. med. Wochensch.* 1901, Nr. 35, p. 1381.

[2] First called "purgatol."

[3] The purgatin supplied to me melted at 179°-180° C. (uncor.). It showed no definite crystals even under the highest powers of the microscope, and it was certainly not a pure chemical substance, since one recrystallisation from acetone raised the melting-point 10° C. This, however, is of little therapeutic importance.

[4] *Therapie der Gegenwart.* n.f. iii. p. 200 (1901).

[5] *Deutsch. Aerztestg.* May 15, 1901.

[6] *Therapie der Gegenwart.* iv. p. 2 (1902).

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habitual constipation, and found it to be a good purgative in doses of ·5-1 gramme (7½-15 grains), producing in twelve to eighteen hours a pultaceous motion without pain or tenesmus. Slight constipation was subsequently noticed, but no other ill effects. On one occasion 5 grammes (77 grains) were given. He found it to act best in functional constipation, especially that of neurasthenics. In symptomatic or secondary constipation due to mechanical obstruction (peritoneal adhesions), disease of the central nervous system (tabes), etc., he found it inactive. He compares its action to that of rhubarb, but says it is to be preferred on account of its constant composition and tastelessness.

Stadelmann was less successful. From observations on forty patients (about 100 administrations) he found a dose of ·5 gramme (7½ grains) too small: it rarely induced an evacuation, and even 1 gramme (15 grains) often failed. Two grammes (31 grains) were usually necessary. This dose produced one or more, frequently two, semi-solid stools in three to twenty hours, but some patients even failed to react to repeated doses of this amount. No serious ill effects were noticed: there was never nausea or vomiting, and very rarely colic. The urine was found to be of a red colour after two and a half hours. If alkali was added to the urine, the red colour could be demonstrated in one and a half hours; it was found to reach its maximum in five hours, and was still to be seen (with a 2 gramme dose) after thirty hours. Stadelmann regards the substance as a good purgative, and recommends it, beginning with ·5 gramme (7½ grains) and gradually increasing, in cases of hæmorrhoids, and in neurasthenics and hypochondriacs when defecation is difficult.

Ebstein, on the whole, agrees with Stadelmann. Doses of ·5-1 gramme (7½-15 grains) he generally found insufficient; 2 grammes (31 grains) were usually needed. This dose produced in simple constipation a pultaceous stool, but not always without slight pain. In constipation, accompanied by palpable fæcal masses in the abdomen—a condition he calls "chronic coprostasis"—it acted well as an evacuant ("Schiebemittel") after the masses had been softened by oil injections. But, contrary to Vieth, he does not regard this substance as much superior to emodin (which, however, cannot be bought) in ·1 gramme

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(1½ grain) doses. The coloration of the urine was never missed, and in women it often produced stains on the clothing; but no albuminuria was found. Within certain limits, he regards this drug as a useful, mild purgative, without any injurious action on the stomach or other organs.

On account of the pharmacological interest which this drug possesses, I purchased some at the earliest opportunity and tried it on myself. At the same time I endeavoured to obtain a rough idea of the extent of its absorption. This it seemed to me was the main objection to its use. A perfect purgative of this class is one which, whilst being tasteless and remaining inactive in the stomach, exerts a mild stimulating action as it passes down the intestinal canal, and remains unabsorbed. It should also possess a small dose. The first three conditions "purgatin" fulfils; the last two, one of which is an important one, it does not. It is evident from all the trials of it that have been made that it is absorbed. Ebstein never missed the characteristic red colour of the urine once, and presumably Ewald and Stadelmann did not. But Stadelmann alone gives us any idea of its extent. After a 2 gramme (31 grains) dose it appeared in one and a half hours, reached its maximum in five hours, and lasted thirty hours. And even he gives us no information as to the amount. However, no ill effects from its absorption have been observed; every investigator mentions this, although Ebstein seems to be by no means satisfied on the point. After stating that no albuminuria was found although repeatedly tested for, he says, "Still further attention will have to be paid to this point." With this I agree. The question of absorption is important since it may lead to an action on other organs than the intestine, and especially upon the kidney. And this class of substances is far from being faultless in the matter. Chrysophanic acid produces inflammation of the kidneys in all classes of animals, and aloin when administered to rabbits produces, not purgation, but necrosis of the renal epithelium, and death in a few days.[1] In dogs and cats this has not been observed, but in them owing to the purgation which results less opportunity for absorption occurs. That

[1] Murset, *Arch. f. Exp. Path. u. Pharmak.* xix. p. 130 (1885); *cf.* also Kohn, *Berlin Klin. Wochenschr.* 1882, No. 5, p. 68; Neuberger, *Arch. f. Exp. Path. u. Pharmak.* xxvii. p. 39 (1890).

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an injurious effect may result, however, even in dogs, is evident from one of Meyer's experiments in which ·1 gramme natal-aloin hypodermically produced albumin in the urine. The same dose of barbados-aloin did not do so, but in this case only a minute trace of aloin was found in the urine; in the previous experiment the aloin reaction was distinct. In these animals and in cats and probably men, aloin injected subcutaneously is excreted in the main by the bowel.

The influence of aloes on the kidneys of men is not well known. Greenhow [1] ascribes to it a diuretic effect, and Lewin [2] states that it is an old rule not to administer aloes when there is any difficulty in micturition. He also says that after the large doses used to procure abortion, women complain of pain in the region of the kidneys as well as in the uterus: and Fothergill [3] also mentions "racking pains in the loins" as resulting from aloes. These cases are doubtless exceptional, but I do not believe with some that they are wholly imaginary. Most, if not all, of the commonly-used vegetable purgatives produce their effect by an irritant action on the intestinal canal, and if absorbed they will exert an action, varying from the mildest stimulation to irritation, on the kidney, notwithstanding that they may be excreted to a large extent by the bowel. This action is not necessarily injurious: in some cases where a mild stimulation is required it may possibly be beneficial; but whether injurious or otherwise it is necessary to recognise it. The present experiments have some bearing on this. They were mainly undertaken to determine the amount of purgatin excreted by the kidneys and were commenced without any intention of publication.

The following are the details of my experiments:—

1. Slight constipation present. ·65 gramme (10 grains) purgatin taken forty minutes before breakfast. A slight motion occurred after thirty-six hours, followed by a second small and softish motion three and a half hours later. The urine first passed (six hours) was markedly claret-coloured: that for the remainder of the day was of a high, normal

[1] *Lond. Med. Gaz.* xix. p. 270; quoted in Pareira's "Materia Medica," 4th edit. vol. ii. pt. i. p. 197 (1855).

[2] *Uebenwirk. d. Arzneimittel*, 2te Aufl. p. 724.

[3] Quoted in Pareira, *loc. cit.* p. 198.

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colour. The only distinct effect here was a diminution in consistence of the second motion.

2. The following day 2 grammes (31 grains) purgatin were taken one hour after breakfast. Marked rectal irritation, and a pultaceous stool followed after seven and three-quarter hours. No further effect was noticed.

3. Five weeks later 4 grammes (62 grains) purgatin were taken one and three-quarter hours after breakfast. Mild constipation existed. A formed but rather soft motion was passed five and a quarter hours later, and an hour afterwards a semi-solid, dark reddish-brown stool. No motion occurred during the next two days; on the third day a soft, but formed, dark-brown stool was passed. The next day the motion was normal.

During the action of this dose distinct ill-effects were experienced. One and a quarter hours after administration a slight feeling of weakness in the legs was felt, and half an hour later a slight feeling of heaviness in the right hypochondriac region. This soon passed away, but the feeling of weakness continued all through the day. The following morning I awoke with pain in the loins, which was sufficiently severe throughout the day to prevent sitting in one position long with comfort. At the same time a large amount of urine was passed. It contained no albumin. The pain was still appreciable the next day, and the day following there was a feeling of stiffness in the lumbar muscles. This effect rather surprised me, notwithstanding the action of closely similar compounds.

4. Three weeks later 3 grammes (46 grains) purgatin were taken to study more closely the excretion. No constipation existed. It was taken at mid-day immediately after a normal motion had been passed. An easy, soft, formed motion followed in four and a half hours, and a second motion, semi-solid at first, but almost liquid towards the end, three hours later. A third thin stool was passed one and three-quarter hours afterwards, and a fourth, similar, next day twenty-two and three-quarter hours after the drug had been taken. A fifth occurred in the evening (thirty-one hours after administration), and next day (forty-seven and a half hours) a small, soft, but formed motion was passed. The following day the

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motion was still softer than ordinary; afterwards it was normal.

The same mild muscular weakness in the legs and lumbar uneasiness—hardly amounting to pain here—were experienced this time also, but both were less severe than in the preceding experiment. In this case, however, there was slight colic immediately preceding the seven and a half hour and nine and a quarter hour motions, but no other ill effects were observed. The most noteworthy result of this experiment is the number of motions influenced by the taking of the drug.

Excretion.—The object of the experiments, as already stated, was to observe the amount of drug excreted in the urine. The method employed was rather a crude one, but it seemed to be the best simple one available. It consisted in comparing the alkalised urine, which is of a purplish-red colour, with a solution containing ·2 gramme purgatin and 2 grammes sodium bicarbonate in 100 c.c. To this was added at each testing a little normal urine, and the same quantity of caustic soda solution as was added to the urine under investigation; both urines were then diluted with water until similar tints were obtained. At first this judging of the tints proved difficult. The excreted drug gave a much redder colour than the control solution, and it at once became evident that during its passage through the body the substance had undergone some change. It is said that purgatin is excreted as anthrapurpurin, but if that were wholly the case the urine would give the same colour reactions as a purgatin solution, which it does not. In part it is almost certainly excreted as anthrapurpurin, since I have obtained from a rabbit's urine a substance with a much higher melting-point than purgatin itself. The absorption spectrum, also, in solutions as strong as can be used, shows the anthrapurpurin bands, but in weaker solutions the bands disappear and there is only a powerful absorption of the violet end of the spectrum. This and certain colour reactions which the urine shows, prove that the anthrapurpurin or purgatin is combined or masked in some way, but in what way I have not yet definitely determined.

In order to overcome the difference in colour between the

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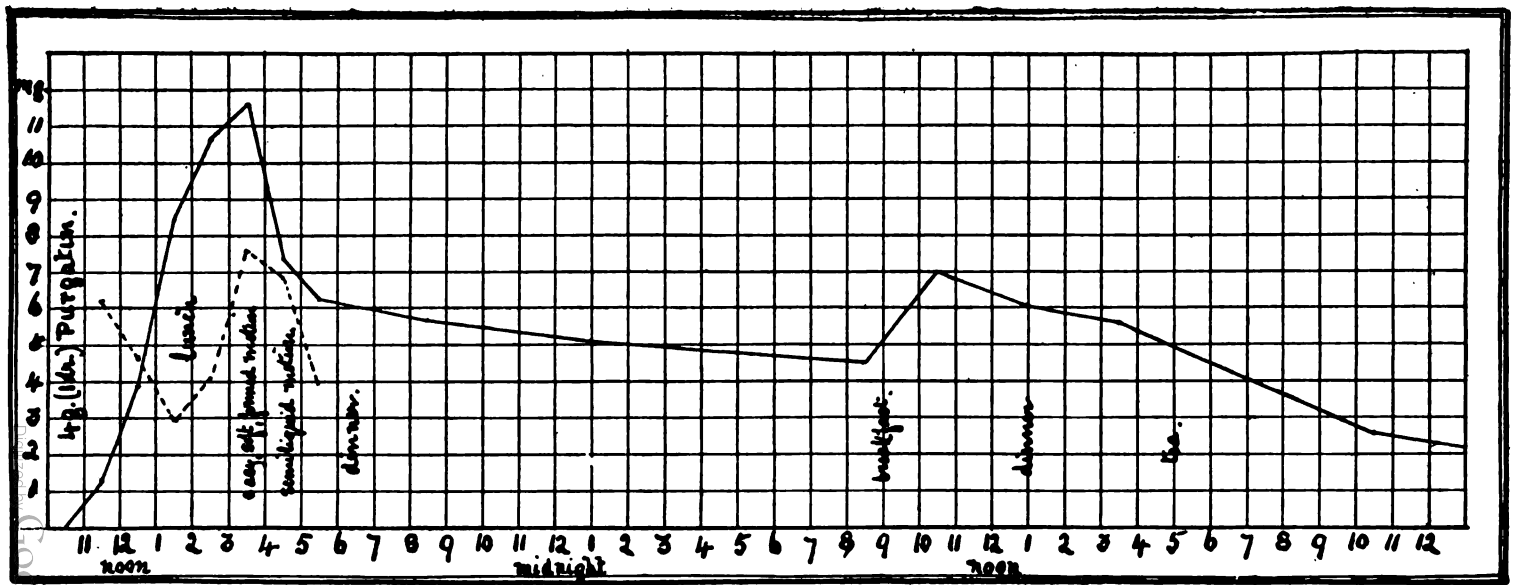
Purgation.
Lunch
dinner.
breakfast
dinner
tea.
noon
midnight
noon

FIG. 1.

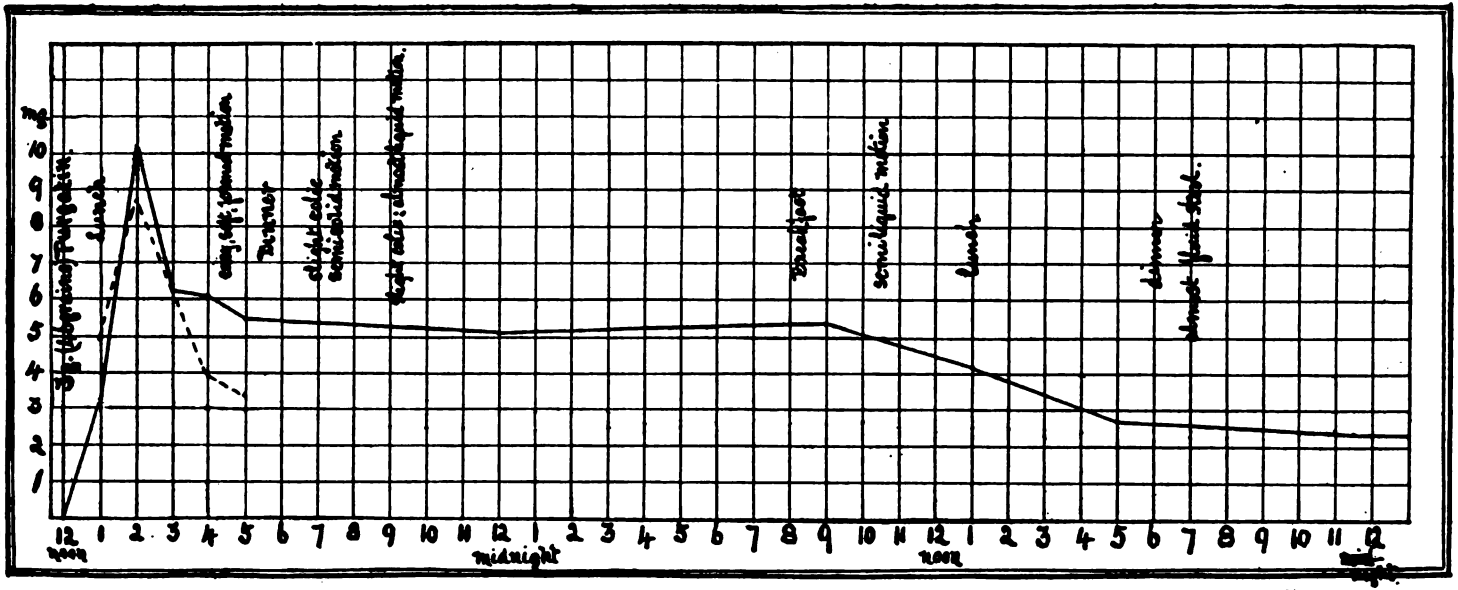

FIG. 2.

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alkalised excreted urine and the control solution, a little sodium picrate solution was added to the latter. The solution thus produced closely approximated in tint to the former and it was then not difficult to make an estimation within about 5 per cent. error. The results obtained were probably too low notwithstanding that part is excreted as anthrapurpurin which gives somewhat more powerful colour reactions than purgatin, since from a rabbit weighing 1350 grammes to which 1·35 grammes (1 gramme per kilogramme) had been given by the mouth, only ·59 gramme was obtained by this method from the urine although but little was excreted by the bowel. Most was excreted during the first two days —·2 gramme on the first and ·3 gramme on the second day; a trace was still present on the ninth day. The fæces were not markedly influenced, but their condition is interesting in connection with the fact that aloin does not purge these animals. During the first day a few softer brownish-red masses were excreted in an otherwise normal motion; for the next three days no fæces whatever were passed; during the fifth day a mixed, part normal, part dark red and soft motion was discharged, and the following day there was a copious, in large part soft, dark red stool. The following day a similar motion was passed, and on the eighth day were a few softish nodules.

The experiments on myself with the two larger doses have been plotted into curves. After the 4 grammes dose (Fig. 1) the excretion is seen to rapidly increase to the fifth hour and then rapidly diminish. After reaching half the maximum it gradually falls until the morning of the next day when a second rise occurs. This, in all probability, is mainly due to the greater urinary secretion induced. Afterwards the quantity excreted uniformly fell until one o'clock on the fifth day, when no trace could be detected. In all about ·29 gramme was estimated to be excreted in the urine; but apart from the fact that this method probably gives too low results, this must not be assumed to be the whole absorbed. Not improbably some is excreted by the bowel. In the diagram the dotted line represents the quantity of urine excreted during the first five hours. The divisions in this case equal 10 c.c.

The second curve (Fig. 2) shows the excretion after 3 grammes purgatin, and in its general characters it closely

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resembles the preceding one. The excretion reaches its maximum sooner—due perhaps to its having been taken an hour before lunch—and it has a more even fall. A trace in the urine was still found seventy-two hours after the drug had been taken. In all ·2 gramme was obtained.

After the 2 gramme dose the quantity in the urine for five successive eighty minutes was a trace; ·028 gramme; ·039 gramme; ·027 gramme; ·03 gramme; and a trace was still present on the second morning after administration.

Therapeutic uses.—As regards the therapeutic uses of this substance I have nothing to add to the statements of Ewald, Stadelmann and Ebstein. It seems to be a slow but under ordinary circumstances a sure purgative with no serious after-actions. The colic occasionally induced is of a mild character. In large doses it undoubtedly gives rise to renal irritation and hence should not be given where renal trouble exists. It is mainly indicated where a mild laxative is required; but I am very doubtful if it will be found better than the ordinary crude drugs in cases of habitual constipation. The coloration of the urine is unfortunate, but if patients are warned of this it need not prove a barrier to its use.

Clinical Notes

TWO CASES OF PERFORATION OF THE STOMACH—ONE RECOVERY

By D. A. CALLENDER, M.B., Ch.B. Ed.,
Medical Registrar, Leith Hospital

DURING the last year I have had the opportunity of having under my observation a considerable number of abdominal cases, the following two of which, and more especially the first one, may be worthy of recording.

CASE I. R. C., age 27, was seized with sudden acute abdominal pain and vomiting at 1 A.M. on the morning of March 18, 1901. During the day previous she had been in her usual health.

State on examination.—The patient was first seen at 5 A.M., and was lying in a state of collapse, with both knees drawn up, drooping angles of the mouth, sunken eyes and temples, and an

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ashy-grey hue of the face. The pulse was 130 per minute, very thin and wiry. Temperature subnormal. There was considerable distension of the abdomen, with extreme tenderness on pressure. Tympanites was excessive, and the liver and splenic dulnesses were entirely obliterated. The apex of the heart was tilted upwards and to the left into the fourth intercostal space. The bowels had not moved for three days, and the vomiting, which only lasted for the first three days, was never stercoraceous, nor did the vomited matter ever contain blood. The urine contained no abnormal constituent.

Diagnosis.—The diagnosis of perforated gastric ulcer with secondary general peritonitis was made, and from the fact that she had suffered from symptoms of gastric ulceration there seemed little doubt as to the condition.

Treatment and further report of the case.—Morphia gr. $\frac{1}{2}$ was at once administered, and continued every four hours, and all food by the mouth stopped. Nutrient enemata were given every four hours, and hot linseed poultices alternately with turpentine stupes applied to the abdomen every two hours. The distension and tympanites were becoming more marked, and the pulse quicker and feebler. In the evening she was practically moribund, the first sound of the heart was inaudible, and the pulse running in character. At 1 A.M. on Sunday morning (twenty-four hours after the onset of the attack) there was a slight improvement in her condition. The pulse was slower and stronger, the pain was subdued, and the strength was being fairly well maintained. At 3 A.M. on Monday morning the pulse again got feeble, and strychnine gr. $\frac{1}{60}$ was injected hypodermically with the desired effect. To alleviate the abdominal distension and tympanites the abdomen was punctured on several occasions, and enemata of hot water, soap and turpentine also administered, with the result that a good deal of flatus escaped in that way along with some very hard black scybalous masses. During the next week she complained of a sharp stabbing pain on the left side of the chest. On auscultation coarse friction was heard over the base of the left lung, probably indicating a pleurisy secondary to the abdominal inflammation. On the tenth day the abdominal symptoms gradually subsided, the distension was becoming less, and there was less tenderness on pressure. The liver and splenic dulnesses were returning from above downwards, and the pleuritic inflammation was beginning to clear up. All food by the mouth was stopped for a fortnight. On the fourteenth day she was allowed a teaspoonful of beef-tea every four hours. The amount was gradually increased, and was not followed by any pain, nausea or vomiting. From that time onwards she gradually improved. Her strength slowly

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returned, and she was up and going about in her usual health on the 30th April 1901.

CASE II. The second case was that of a young girl, age 28, who also had had symptoms of gastric ulceration. She had been in her usual health till one morning at 2 A.M., when she was suddenly seized with acute abdominal pain and vomiting, accompanied with the most extreme collapse. There was great tenderness over the whole abdomen, and considerable distension and tympanites. An operation was refused, and she died within twenty-four hours. A *post-mortem* examination was made next day, and a perforated ulcer of the stomach was found, with general peritonitis over the whole of the bowels.

Remarks.—Of the two cases, the first one is undoubtedly the more interesting from the fact of her having recovered without operation from what appeared to be a perforation of the stomach. Comparing the two cases one finds they presented similar symptoms and signs, and from the result of *post-mortem* examination in the second one there was no doubt that the first one was one of perforation of the stomach. The question of operation was, of course, discussed at the time, but by the time an operation could have been performed the patient was too collapsed, and besides by operation one would simply have broken down all adhesions already formed, and so have undone Nature's method of cure. There was no recent vomiting of blood, but the melæna which existed for the first ten days of her illness pointed to a fresh ulceration, probably in the neighbourhood of the pylorus, which after her hard day's work had suddenly given way and set up an acute and extensive inflammation of the peritoneum. The perforation must have been a very minute one, and one which must have been immediately shut off from the general peritoneal cavity by the formation of adhesions, so preventing any further escape of the contents of the stomach. Very little food, if any, could have been in the stomach at the time the perforation occurred, as the acute symptoms did not develop till three and a half hours after her last meal, which had only consisted of a cup of tea and a slice of toast.

Fagge reports a case of a young girl brought into hospital with all the symptoms of a perforation of the stomach, who recovered by the administration of full doses of morphia, and by the continued use of nutrient enemata to support the strength. Two months afterwards she was readmitted in the same state of collapse with the same symptoms. She died within thirty-six hours. At the *post-mortem* examination a perforation of an old-standing gastric ulcer was found. What had taken place

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previously is not difficult to explain. That ulcer had given way, but was immediately shut off from the general peritoneal cavity by the formation of adhesions, and I have no doubt that that was what occurred in the case under discussion.

A SUGGESTION FOR THE TREATMENT OF LUPUS

By NORMAN WALKER, M.D., F.R.C.P.Ed.,
Edinburgh

FOR over two years I have been using the X-rays in the treatment of Lupus. Last summer a friend mentioned to me that an electrical engineer had told him that iodine and electric light produced much greater reaction than either separately. It occurred to me to try the effects of iodine along with the X-rays, and my clinical assistant, Dr Raeburn, expanded the idea. We selected a very extensive case of Lupus of the face. He painted one part with carbolic lotion, one with tincture of iodine, and another with liq. antimon. chlor., and then exposed the patient to the X-rays. After a short period of treatment the parts got so sore that treatment had to be suspended, and the part to which the carbolic acid had been applied became what was practically an ulcer as large as the palm of one's hand. Under treatment this healed up with an almost perfect scar; indeed the result has been the most satisfactory that I have ever had in an extensive case.

I determined to further pursue this line of treatment, and now, in suitable cases, I paint the affected part with pure carbolic acid, and then expose it to the X-rays. In a very few days there is considerable reaction; the part swells and there is often some sloughing. Under soothing treatment, however, (I generally use zinc ichthyol salve muslin) the ulcer soon heals. Sometimes one application is sufficient, if the patch is small, but every case in which I have used the method has greatly benefited, and it can be repeated until a cure results.

This experience emphasises, I think, the fact which I dwelt upon in the discussion at Cheltenham, that treatment by the various Light methods should invariably be carried out under the directions of one who is familiar with the diseases which are being treated, and also that it is not wise to limit treatment to these at present fashionable methods.

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AN UNUSUAL EFFECT OF X-RAYS IN A CASE OF RINGWORM OF THE SCALP

By F. GARDINER, M.B.,
Clinical Assistant, Skin Department, Royal Infirmary, Edinburgh

MAGGIE D——, æt. 7, has been under treatment at the Skin Department, Royal Infirmary, Edinburgh.

A ten-inch coil with Cox record tube was used, and in all about thirty exposures of five minutes' duration each were given.

After twelve exposures there was a little loss of hair, but no satisfactory fall even after eighteen more, and the treatment was stopped in the middle of February.

Six weeks later the hairs on the top of the head fell out suddenly after brushing, leaving the top of the head quite bald.

That hairs come out after exposure to X-rays is a well-known fact, and that they do come out suddenly after a certain number of exposures has been noted, but the fact of their coming out so long after cessation of exposures is hitherto unrecorded, although in rodent ulcer and lupus one sees improvement going on for a few weeks after X-rays treatment has ceased.

The patient's sister, who was treated similarly, reacted in the usual way—the hairs coming out freely during treatment.

The patients were using a weak ammoniated mercury and sulphur ointment, along with superfatty liquid soap, which could have had no effect in producing the alopecia.

MR DOOLEY ON MR CARNEGIE'S GIFT

[We have had several articles on the Carnegie Trust, written from the serious standpoint. Through the kindness of Mr W. Heineman, publisher, London, we are enabled to reproduce Mr Dooley's opinion on the subject, which we are sure our readers will enjoy.]

"TIN millyon dollars to make th' Scotch a larned people," said Mr Dooley. "Who done that?" asked Mr Hennessy. "Andhrew Carnaygie," says Mr Dooley. "He reaches down into his pocket where he keeps th' change an' pulls up tin millyon bawbies, an' says he: 'Boys, take ye'er fill iv larnin', an' charge it to me,' he says. 'Divvle hang th' expinse,' he says. 'Th' more th' merryer,' he says. 'A short life an' a happy wan,' he says. 'Larn annything ye like,' he says. 'Name ye'er priference,' he says, 'an' put it all down to Carnaygie,' he says.

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"That's th' way we do it, Andhrew an' me. Whin other men are chasin' a bit iv loose money to th' corner iv a little leather purse to make good on a chair or a foldin' bed iv classical larnin', we ordher th' whole furniture store an' have th' bill sint up to th' house. Idjacation in Scotland has been on th' retail. Th' Scotch have been goin' in with a bag of oatmeal an' exchangin' it f'r enough larnin' to last over th' night. It's been hand to mouth with thim f'r years. Andhrew an' me propose f'r to buy idjacation f'r thim in th' bulk. Profissor, wrap up tin millyon dollars' worth iv thought an' sind it to th' Scotch.

"Hinnissy, I don't know what's goin' to happen whin us American millyonaires begins to unbelt. It used to be that we niver knew whin we had enough. No matther how much I made I was hanted be th' fear that I'd wake up in th' mornin' an' find it all gone, an' me with a pair of overalls on runnin' up a laddher with a box iv mortar on me neck. Whin ye run in an' paid me th' three millyon dollars ye owed, I was afraid to put it in a dhrawer f'r fear ye might come back afther I was gone; an' I didn't want to carry it in me pocket f'r fear I'd lose it, an' if I stuck it in a bank an' see th' prisidint ridin' in a cab, a chill wint up me back an' I dhreamed that night iv mesilf with a dinner-pail undher me arm pikin' off to th' rollin' mills just befure th' sun come up. But ye get used to money just as ye get used to poverty, Hinnissy, though niver as much used to it, fr'm th' lack iv companions, an' there come a time whin I didn't know what to do with it. I cudden't give it back to th' men I got it fr'm. They wudden't take it. Manny iv thim ar-re dead. Besides, 'tis again me system. I've got into th' habit iv makin' it, but not into th' habit iv spindin' it. I can't buy things with it, f'r there's nawthin' I've larned how to buy that won't make money f'r me. I can't give it to th' poor because if they had it they wudden't be poor anny longer. Besides no wan ought to be poor in this land iv opporchunity. As th' pote says, Opporchunity knocks at ivery man's dure wanst. On some men's dures it hammers till it breakes down th' dure an' thin it goes in an' wakes him up if he's asleep, an' iver aftherward it wurruks f'r him as a night-watchman. On other men's dures it knocks an' runs away, an' on th' dures iv some men it knocks an' whin they come out it hits thim over th' head with an axe. But ivrywan has an opporchunity. Th' poor ar-re people that 've been out at wurruk whin opporchunity knocked. I can't do annything f'r thim. Th' poor mustn't be pauperized. But I must do something to get rid iv th' accumulations iv roly boly that's grajally crushin' out me young life, so I buys a university to play with.

"Th' day whin we millyonaires bought yachts an' brown

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stone houses with mansard roofs onto thim an' were proud iv having thim has gone by, Hinnissy. 'Twill not be long befure none will be so poor as not to own a private yacht, an' th' nex' time a Coxey army starts f'r Wash'nton, it'll ride in a specyal vestibule thrain. What was luxuries a few years ago is mere necessities now. Pierpoint Morgan calls in wan iv his office boys, th' prisident iv a naytional bank, an' says he, 'James,' he says, 'take some change out iv th' damper an' r-run out an' buy Europe f'r me,' he says. 'I intind to re-organize it an' put it on a paying basis,' he says. 'Call up th' Czar an' th' Pope an' th' Sultan an' th' Impror Willum, an' tell thim we won't need their sarvices afther nex' week,' he says. 'Give thim a year's salary in advance. An' James,' he says, 'ye betther put that r-red headed book-keeper near th' dure in charge iv th' continent. He doesn't seem to be doin' much,' he says. Ye see, Hinnissy, th' game has got so much bigger since we first made our money that if Jay Gould was to come back to earth with some iv th' plays we used to wondher about, he'd feel like an old clothes man. So, 'tis nawthin' strange whin Jawn D., or Andhrew, or mesilf, buys a string iv universities an' puts in tin millyons to teach th' young idee how to loot. Befure long we'll be racin' thim. I don't know but what 'tis th' finest kind iv spoort th' wurruld has ever heerd about.

"Father Kelly don't think as much iv it as I do. He was in here las' night, an', says he: 'Ye can't buy idjacation f'r people,' he says. 'If ye cud, th' on'y man in th' wurruld that knew anything wud be Jawn D. Rockefeller,' he says. 'Idjacation,' he says, 'is something that a man has to fight f'r an' pull out iv its hole be th' hair iv its head,' he says. 'That's th' reason it's so precious,' he says. 'They'se so little iv it, an' it's so hard to get,' he says. 'They'se anny quantity iv gab that looks like it, but it ain't th' rale thing,' he says. 'Th' wurruld is full iv people wearin' false joolry iv that kind,' he says, 'but afther they've had it f'r a long time, it tur-rns green an' blue, an' some day whin they thry to get something on it th' pawnbroker throws thim out. No, sir, idjacation means throuble an' wurruk an' worry, an' Andhrew Carnaygie himsilf is th' on'y wan I know that's been able to pick it up in th' brief inthervals between wan dollar an' another,' he says. 'Th' smartest man in my day at th' Colledge iv th' Sacred Heart was a la-ad who used to come to school with half a dozen biled potatoes in an ol' newspaper, an' sawed wood all evenin' to pay f'r his larnin'. Annything that boy larned, he larned, ye bet. Ivry line iv Latin he knew riprisinted a stick iv wood, an' belonged to him 'Twasn't borrowed at the back dure iv a millyonaire. He knew more thin anny man I iver see, an' he's now at th' head iv wan

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iv th' best little wan room schools in Du Page County,' he says. 'Andhrew Carnaygie's tin millyons won't make anny Robert Burns,' he says. 'It may make more Andrew Carnaygies,' says I. 'They'se enough to go round now,' says he.

"I don't know that he's right. I don't know f'r sure that Father Kelly is r-right, Hinnissy. I don't think it makes anny difference wan way or th' other how free ye make idjacation. Men that wants it 'll have it be hook an' be crook, an' thim that don't ra-aly want it niver will get it. Ye can lade a man up to th' university, but ye can't make him think. But if I had as much money as I said I had a minyit ago, I'd endow a bar'l iv oatmeal f'r ivry boy in Scotland that wanted an idjacation, an' lave it go at that. Idjacation can always be had, but they'se niver enough oatmeal in Scotland."

"Or Homestead," said Mr Hennessy.

"Or Homestead," said Mr Dooley.

Meetings of Societies

The Edinburgh Medico-Chirurgical Society

THE seventh meeting of the session was held on Wednesday, March 5th—Prof. T. R. Fraser, the President, in the chair.

Dr Edwin Bramwell showed a case of meralgia paræsthetica in a miner aged forty-three, who up till eighteen months ago had enjoyed good health. It commenced one morning, while he was walking, with pain over the right hip so severe that he had soon to give up. The only objective sign was complete anæsthesia on outer side of right thigh. Two to three inches of the external cutaneous nerve were resected with the result that the pain was completely lost.

Mr Caird showed a male patient, aged sixty-eight, after removal of portion of small intestine for tuberculous stricture; it was unusually late in life for tuberculous stricture; it looked like a carcinoma and had been treated as such.

Dr Byrom Bramwell showed :—

1. *A case of tabes with acutely developed ataxia, in which great and rapid improvement had resulted from Frenkel's plan of treatment.*—The patient was a married man, aged thirty-five; for five years he had been a barman and for sixteen years previously a ship steward. He was admitted to the Edinburgh Royal Infirmary on 22nd January 1902, because of inability to stand and walk.

He had enjoyed good health until the present illness commenced. He absolutely denied syphilis and gonorrhœa. There

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was no suspicion of alcoholic excess; his average allowance of alcohol was four glasses of beer per week; he did not take more than twelve glasses of whisky per annum. He was not a heavy smoker.

For six months before the inability to walk developed, he had had some, but only slight, shooting pains in the legs, more especially the left leg which was sometimes swollen at night, the result, he thought, of varicose veins. He had occasionally experienced a dull pain in the back and some little difficulty in micturition, having to "force" a little to get the urine away.

The inability to walk developed rapidly on 13th January 1902. For a fortnight before this date, he had felt some stiffness, and pins and needles in his legs and feet, but had no difficulty in walking in the dark. He was in the habit of walking from his place of business to his house—a distance of about a mile—every night at twelve o'clock. On Sunday, 12th January, he walked three miles. On Monday, 13th January, he had great difficulty in walking from one room to another. On 14th January, he was quite unable to stand and walk.

On examination it was found that the inability to stand and walk was due to ataxia. There was no paralysis. The muscularity of the legs was good. The movements of the legs were wildly ataxic. There was no ataxia in the arms. When the eyes were closed, there was total loss of the sense of position, both during and after passive movements, in the lower extremities. Occasional shooting (lightning) pains were complained of in the legs (thighs and calves). There was some varicosity of the veins of the left leg. The left calf measured 12½ inches and the right 11¾ inches —the patient was a short, spare man.

The knee-jerks and Achilles-jerks were completely absent even after reinforcement; the deep reflexes in the upper extremities were present but not exaggerated; the jaw-jerk was present. The direct muscular excitability of the anterior and posterior leg muscles and of the quadriceps group was slightly increased; there was no myoidena contraction. The plantar reflex was very active in both legs, the toe movement being flexion; the cremasteric reflex was absent on both sides; the abdominal reflex was present, but slight.

The pupils were unequal in size and markedly dilated, the right measured 8 and the left 10 millimetres; they were quite insensible to light, and only contracted very slightly on accommodation, the right pupil becoming 6 and the left 8 millimetres in size; they did not dilate on powerful stimulation (pinching and faradic irritation) of the skin of the neck.

There was well marked thoracic and ulnar analgesia, and considerable analgesia and anæsthesia of the lower extremities.

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Biernacki's sign was not present. There was also marked analgesia of the calf muscles. There was some, but only slight, hypertonia. There was no girdle sensation. A slight, dull pain in the "small of the back" was occasionally experienced.

Slight difficulty in micturition (necessitating "forcing") was occasionally experienced; the bowels were regular; there was little or no loss of sexual desire and power.

There had never been diplopia or ptosis; the ocular movements and the optic discs were normal; the special senses were normal; there were no crises and no trophic or vasomotor derangements. The mental functions were unimpaired, there was no articulatory defect, and no facial or tongue tremors.

The case was interesting because of:—(1) The absolute, and apparently quite straightforward, denial of syphilis and gonorrhœa. (2) The acuteness with which the ataxia had been developed; Dr Bramwell had lately analysed 155 cases of tabes which had come under his notice, in three of these cases only was the ataxia very rapidly developed. (3) The dilated condition of the pupils. In 104 of the 155 cases of tabes which Dr Bramwell had analysed, the size of the pupils was mentioned in the notes. In 69 of these 104 cases, or 66·3 per cent., the pupils were contracted (below 3 millimetres); in 27 cases, or 25·9 per cent., of medium size (between 5 and 3 millimetres); and in only 8, or 7·6 per cent., dilated (above 5 millimetres). (4) The striking and rapid improvement which had resulted from Frenkel's plan of treatment. On 22nd January the patient was unable to stand or walk, the movements of the legs being wildly ataxic. Frenkel's treatment (exercises with cross boards) was commenced on 27th January. In the course of ten days (on 7th February) the patient was able to stand and walk with the help of a go-cart. A week later (14th February) he was able to walk with the help of two sticks. He could now (5th March) walk steadily and well with sticks, and he could also walk across the room fairly well and without a marked ataxic gait, without sticks, *i.e.* totally unsupported.

2. *A case of complete consolidation of the left lung which presented great diagnostic difficulties.*—The patient, a married man aged fifty-seven, a cellar-man by occupation, was admitted to the Edinburgh Royal Infirmary on 28th January 1902, complaining of great shortness of breath on exertion, debility, hoarseness of voice and troublesome, hoarse cough, and some pain in the left hypochondriac and infra-axillary regions.

The illness had commenced seven months previously. There had been very little expectoration, but the patient had lost weight and had had some sweating at night. At first he denied syphilis, but subsequently admitted that he had had a hard

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chancre followed by secondary symptoms eight years ago. When thirty-seven years of age (twenty years ago) he had had rheumatic fever. For the past twenty years he had occasionally suffered from sciatica and from what he termed rheumatic pains in the legs. These pains do not appear to have been lightning pains.

On admission he was found to be very debilitated and considerably emaciated (height 5 ft. 5½ ins.; weight 9 st. 7 lbs.); the temperature was 99·2; the pulse 96. He was not anæmic and did not look cachectic; there was some cyanosis of the face and lips.

The whole of the left chest from top to bottom was dull on percussion. At the base of the left lung, the dulness was less absolute than one would expect in a case of pleuritic effusion, and hypodermic exploration showed that there was no fluid. Over the greater part of the left lung, loud bronchial breathing, the expiratory sound being particularly well marked, and increased vocal resonance were present. There were no moist sounds over any part of the left lung. The dulness was clearly due to consolidation of the lung.

At the level of the nipple, the left chest measured half an inch more than the right (18¾ and 18¼ respectively).

There was some impairment of the percussion note between the *right* scapula and the spine, and over this area and all down the right side of the spinal column a systolic murmur was audible.

Indistinct pulsation could be felt in the second and third left interspaces close to the sternum.

Over the manubrium sterni and in the second and third interspaces, both right and left, a systolic murmur and accentuated aortic second sound were audible; the murmur and accentuation were much louder in the second and third left interspaces than on the corresponding point on the right side. Loud, blowing, tubular breathing was audible over the manubrium sterni and especially under the left sterno-clavicular articulation.

The heart appeared to be of normal size; the mitral sounds were normal.

The radial arteries were thickened and somewhat atherosed. The left radial pulse was somewhat smaller and the apex of the upstroke in the sphygmographic tracing less sharp than that of the right.

The veins in both upper extremities and on both sides of the neck, but especially on the left side of the neck and of the left arm, were somewhat engorged.

The left vocal cord was fixed and immobile. There was no difficulty in swallowing. The pupils were contracted and usually

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equal (3 millimetres in size), but occasionally the left pupil was much more contracted (2 millimetres). No tracheal tugging could be detected. The contraction of the pupils to light was somewhat sluggish.

There were no enlarged glands either in the neck or axillæ.

The red corpuscles were slightly reduced in number; normal appearance; the white corpuscles numbered 28,000 per cubic millimetre, *i.e.* marked leucocytosis was present.

The deep reflexes were altered in a very interesting way. The right knee-jerk was active, the left absent even after reinforcement; both Achilles-jerks were absent. This condition of the reflexes was highly suggestive of previous syphilis, and on cross-examining the patient he admitted (though he had previously denied it) that eight years previously he had a hard chancre followed by secondary symptoms.

The X-ray examination gave no definite information. The picture which was obtained, both on the screen and in the photographic negative, was very indistinct. It showed complete consolidation of the left lung, and some opacity to the right of the spinal column, between the right scapula and the middle line, and below this point to the base of the right chest. Dr Dawson Turner, who made the examination, could give no opinion as to the nature of the lung consolidation, or as to the presence or absence of an aneurism.

The diagnosis was extremely difficult. The dulness was clearly due to consolidation of the lung; there did not appear to be any fluid in the pleural cavity. Most of the competent observers who had examined the case were of opinion that the consolidation was due to malignant disease of the lung and mediastinal glands. Dr Bramwell found it very difficult to accept this opinion. He had never seen such extensive consolidation the result of malignant disease of the lung without much more cachexia and anæmia. Dr Bramwell thought that the consolidation of the left lung was probably due to aneurismal pressure on its root. There was certainly arterial and aortic disease. The patient had had syphilis, and the condition of the reflexes was suggestive of a post-syphilitic lesion. The absence of anæmia and cachexia and of any glandular enlargement at the root of the neck was against malignant disease. On the other hand, the absence of tracheal tugging and of difficulty in swallowing was against aneurism. The paralysis of the left vocal cord, the difference in the pulses and pupils, were rather in favour of aneurism, though they might of course be due to a mediastinal new growth. It was difficult to reconcile the greater measurement of the left chest (half an inch more than the right) with aneurismal pressure on the left bronchus and resulting consolida-

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tion of the lung. In other cases of this kind which had come under Dr Bramwell's notice, the left lung had always been more or less collapsed. The leucocytosis was at first sight strongly in favour of a new growth, for leucocytosis is usually a marked feature in malignant disease of the lung, but it is not present in uncomplicated cases of thoracic aneurism. Dr Bramwell was, however, of opinion that the leucocytosis could quite well be accounted for by the condition of the lung, granting that the consolidation was the result of aneurismal pressure on the root. He had seen, either during life or in the *post-mortem* room, several cases in which consolidation of the left lung had been produced in this way; in some cases the lung had been completely solidified, and catarrhal and inflammatory changes, in one case going on to gangrene, had developed in it. Such a condition of the lung would account for the leucocytosis. The point was of considerable diagnostic interest; so far as he knew there was no recorded observations regarding it—the condition of the blood in aneurism with consolidation of the left lung due to pressure on the root.

The course of the case during the time that the patient had been under treatment (rest and iodide of potassium) was, Dr Bramwell thought, in favour of an aneurism rather than of a new growth. In the course of five weeks, the patient had gained 7½ lb. in weight; the leucocytes had dropped from 28,000 to 9800 per cubic millimetre (the red corpuscles now numbered 4,300,000 and the hæmoglobin equalled 75 per cent.); the pain in the left side had disappeared, the dyspnœa was rather less, and the patient had gained strength. The pulse had remained quick (average about 100), the temperature was usually normal though occasionally somewhat elevated; there had been very little expectoration. During the past three or four days, the patient had spat a small quantity of thick, tenacious, dark-brown sputum. Microscopical examination of the sputum showed numerous large cells with well-marked nuclei, many of the cells contained pigment particles derived from the lung, others fatty granules. The character of the cells was not distinctive; they might be merely swollen catarrhal cells derived from the bronchi or air cells; they might be derived from a new growth (carcinoma or large-celled sarcoma); the pigmented character of some of the cells was perhaps in favour of the former view.

Taking the whole of the facts of the case into consideration and after carefully weighing the evidence, Dr Bramwell adhered to the opinion which he had formed when he first saw the case; he thought that the consolidation of the lung was probably due to aneurismal pressure on its root; but he admitted that the

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diagnosis presented great difficulty. If, as others who had seen the case supposed, the consolidation of the lung was due to the presence of a new growth, there certainly seemed to be arterial (aortic) disease as well. It might be suggested that the consolidation of the lung was due to a syphilitic lesion, but the fact that the whole lung was involved rendered this supposition extremely unlikely.

Mr Miles showed a splint which can be adapted for use as single or double inclined plane.

Card Specimens.

By Mr Caird—

1. Cerebral tumour removed from girl.
2. Intestinal tuberculous stricture from male patient.

By Mr Wallace—

1. Renal Neoplasms (Nephrectomy).
   (*a*) Adenocarcinoma.
   (*b*) Sarcoma.
   (*c*) Polycystic.
2. Tuberculous intestine (enterectomy of 44 inches).

By Mr Miles—

1. From case of spina bifida (with photographs).
2. Malignant stricture of œsophagus.
3. Specimens from cases of appendicitis.

Microscopic Specimens.

By Dr Fleming—

Nerves 10 to 18 weeks after complete division, showing regeneration of nerve fibres in the un-united peripheral portion of the nerve.

The President, Professor T. R. Fraser, read a paper on "The Relative Inefficacy of Cacodylates as Therapeutic Agents" (with lantern illustrations), which appears on p. 385.

Dr Noël Paton read a paper on "The Co-ordination of Medical Research in Edinburgh," see p. 298, which gave rise to an active discussion, in which Drs Byrom Bramwell, Clouston, Carmichael, Gulland, Logan Turner, and others took part.

A CLINICAL MEETING was held in the Royal Infirmary on Wednesday, March 19th—Professor T. R. Fraser, President, in the chair.

Mr Caird showed a girl, aged twelve years, after removal of intra-cranial tumour. She had received an injury on the left side of the head, which had been followed by severe twitchings of right arm and leg and right side of abdomen. Mr Caird trephined over the left Rolandic area and took away a piece of bone, but as the symptoms returned he next took away a larger

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piece of bone, incised the brain and found a tumour. Since its removal there had only been a very slight amount of lameness.

Mr Caird also showed a woman after partial removal of intra-cranial tumour. She had come complaining of a swelling over the left eye and of protrusion of the left eye. There had been vomiting and pain for five years, and her mental capacity had been impaired. On cutting down a tumour was found projecting through the bone, and since its removal her condition had improved immensely.

Dr Boyd showed a case of congenital paraplegia.

Dr Allan Jamieson showed a case of lupus erythematosus, which had improved after prolonged treatment by quinine, 15 grains per day.

Dr Jamieson also showed: (1) a case illustrating the combined features of lupus vulgaris and lupus erythematosus on the same patch, the latter forming the centre; (2) a case of parakeratosis variegata (Unna), which had remained unchanged for a number of years, no treatment of any kind having had any effect; (3) a typical case of pityriasis maculata.

Mr C. W. Cathcart showed a case of complete rupture of the brachial plexus in a lad whose arm had been much stretched by being caught between two rollers. He had all the indications of complete paralysis of the brachial plexus; he seemed, however, to have some slight action of the subclavius and serratus magnus. An incision was made in the neck but no trace of the brachial plexus could be made out, a mass of scar tissue occupying the posterior triangle. The clavicle had to be cut so as to get to the nerves beyond the scar tissue and suture them. So far there had been no improvement, but Mr Cathcart pointed out that it might be months before improvement takes place. He contrasted this case with one of partial rupture of the plexus, viz., of the eighth cervical and first dorsal, and considered these cords too near the subclavian artery to advocate suturing.

Mr Cathcart also showed: (1) a case of excision of gangrenous bowel from strangulated hernia with immediate suture of the bowel, in a man aged 60; (2) a case in which urgent cerebral symptoms were relieved by tapping the middle fossa in fracture of the base of the skull; (3) a case of Bazin's malady which was on the fair way to heal after treatment by salicylic and creasote plaster, followed by ichthyol and zinc. The ulcers had been scraped twice, and caustic had been applied, but without success.

Dr Byrom Bramwell showed a young man in whom the stereognostic sense in the left hand was for a time completely lost; also a case of subacute Bright's disease which showed the beneficial effect of boracic acid as a diuretic.

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Mr Alexis Thomson exhibited (1) a patient after suture of penetrating wound of stomach. A gouge had been pushed through the belly wall, below and to left of umbilicus, perforating the anterior wall of the stomach, close to lesser curvature; (2) patient after operation for irreducible inguinal hernia containing a large diverticulum from the urinary bladder.

Dr G. A. Gibson showed an abberrent case of polyneuritis simulating Landry's disease.

Dr G. A. Gibson and Mr Cotterill showed a man, aged 45, with pyloric stenosis, upon whom pyloroplasty had been done.

Mr Wallace showed for Professor Chiene: (1) a man who three years ago received an injury to the right side of his head from a sledge-hammer. He had made a good recovery, but one year after the injury he began to have fits, as many as 180 within a few hours. Mr Chiene trephined and separated the dura from the bone and from the brain, and there have been no fits since the operation; (2) a boy, aged 11 years, who received an injury to the side of the head, and in whom trephining and separation of the thickened dura had not resulted in improvement; (3) a man who received an injury to the left side of his head fifteen weeks ago, resulting in paresis and fits, and on whom Mr Chiene intends to operate to separate the dura from the bone and from the brain.

Dr Norman Walker exhibited a case of urticaria pigmentosa in a boy aged 7 years. The prognosis was good as towards the age of 18 the condition generally disappears. Dr Walker also showed: (1) a case of rodent cancer in a woman, completely cured by orthoform-arsenious paste; and (2) a case of mild ichthyosis in a little boy which was being treated by small doses of thyroid.

Dr G. A. Gibson showed a brain from which a cerebellar tumour has been removed.

Dr W. Allan Jamieson gave a demonstration on the new Marshall and Woods lamp for the treatment of lupus.

Edinburgh Obstetrical Society

THE fifth ordinary meeting was held on the 12th March—the President, Dr James Ritchie, being in the chair.

Specimens.

Professor Simpson exhibited a fibroid uterus removed from a woman aged 25, and showing well-marked ulcerating surfaces on the centre of the posterior wall and at the fundus, thus demonstrating the cause of bleeding.

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Dr F. W. N. Haultain showed: (1) A large œdematous fibroid from a woman aged 30. There had been no hæmorrhage, and it was removed merely on account of its size. The anterior wall of the uterus was remarkable for its thinness. (2) A fœtus ectromelus, at the $7\frac{1}{2}$ or 8th month, obtained from a patient with central placenta prævia. The shortness of the legs in such cases might form an additional complication in attempting version.

Dr Berry Hart exhibited: (1) a fleshy tuberous mole; (2) specimen of cancer of the cervix; (3) vascular hypertrophy of the cervix.

Dr Brewis (1): Ovary, tube and sac from an extra-uterine gestation. (2) An ovarian cyst which ruptured spontaneously and disappeared a month previous to the operation. It refilled, however, and was removed. The fine membrane healing over the rupture could be seen. (3) Double pyosalpinx and ovarian abscess removed from a patient who almost died from the shock. Inhalation of oxygen for fifteen or twenty hours seemed to be the only agent which pulled her through. Her pulse was 150 for three or four days, and she was unconscious for twelve hours. Saline fluid was injected (8 pints) into the cellular tissue and into the rectum without apparent benefit. (4) A fibroid tumour. (5) An enlarged tuberculous kidney removed extra-peritoneally. The kidney was movable, but not so the ureter, which was greatly thickened by tuberculous deposit. The ureter was cut through at the level of the pelvic brim, and so the kidney was removed, while the lower part was dragged through an incision in the vagina and clamped close to the bladder. The freezing-point of the blood was normal. Previous to the operation the urine contained tubercle bacilli, but since the operation none have been found.

Papers.

Dr J. W. Ballantyne read a paper on "The Problem of the Premature Infant." He stated that the premature infant was born with the skin, the skeleton and the organs of a seven months' fœtus. He was called upon to play the part of a new-born infant with the personalia of a fœtus. He has lost the preparatory transition time of the third trimester of intra-uterine existence, and though he may react with extraordinary success to his new environment, yet in many instances he fails to do so and pays the heavy penalty of premature death. Or he may escape death only to carry a debility with him which projects a baneful influence far into his post-natal life. A difficulty also exists in the fact that the maternal health during pregnancy has an influence upon the viability of the infant; thus the seven months' fœtus of a healthy mother may be altogether viable,

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whereas the seven months' fœtus of a syphilitic mother may be absolutely non-viable. The age of attainment of viability will therefore vary with the state of health of the parents.

Improvement in the management of premature infants, such as have been made possible by the introduction of the incubator and the exclusion of sepsis, have already, so to say, pushed the age of viability back; and it is probable that a better understanding of the problem to be solved may lead to the devising of therapeutic, dietetic and hygienic measures which will push it still further back. It is a fact of prime importance to remember that the age of viability is not a fixed but a variable date.

Dr Ballantyne then briefly described the chief anatomical characteristics of the premature infant, demonstrating that it was really a fœtus, but without one of the most important organs. When the umbilical cord is tied and divided the infant loses touch with his placenta. With the rupture of the membranes he has already lost touch with the liquor amnii, which might be called the fœtal hydrosphere. Passing on to treat of the physiology of the premature infant, he showed that in him fœtal physiology was seen endeavouring to cope with neonatal surroundings, but neonatal physiology was hampered in its actions by persistent fœtal conditions. Taking, for example, the heat regulating mechanism, the fœtus *in utero* does not require to manufacture heat in order to maintain his body temperature; the new-born infant needs to do so, and generally succeeds well; but the prematurely born infant is urgently called upon to do so, and has only the tissue metabolism of fœtal life slightly reinforced by that of an imperfectly established pulmonary respiration to aid him in his difficult task. Other points in his physiology were described, and it was stated that there was a great fixation of minerals in the last trimester of pregnancy. There was a very marked storing up of iron in this period, with a corresponding diminution in the maternal reserve of that metal. Fœtal hypersiderosis is accompanied by maternal hyposiderosis. There would appear to be also a great transference of potash salts from mother to fœtus; in fact, the soda salts predominated until the last three months, when the potash salts begin to pass in greater amount. There was also a flush of lime through the placenta in the last weeks, but this was not accompanied by a corresponding increase in the phosphorus transmitted. Apparently the phosphoric acid which was to combine with the lime in the bones of the fœtus passed first, and, as it were, waited for the lime in the fœtal tissues. Such observations supported the belief that the placenta had great selective powers, and was not the simple transmitting organ which it was often supposed to be.

The pathology of the premature infant was then treated of,

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and the author described the management of such children, Three leading principles ought to be followed—(1) to prolong the most useful and the best features of fœtal life after birth; (2) to supply some of the features which cannot be prolonged; (3) to awaken and strengthen the dormant functions peculiar to post-natal existence.

The first is obtained by the employment of an incubator. The air in the couveuse or brooder ought to be kept as nearly aseptic as may be. If the mother is able to nurse, and the infant is capable of drawing milk from her breast, a great deal can be done to help its survival. In those cases where the infant is unable to suck it is of advantage to pass predigested food directly into the stomach by means of a tube, or to drop it into the mouth with a dropper (*gavage*). Human milk is deficient in iron, and Dr Ballantyne has administered iron (*liquor ferri peptonatus*) to premature children with good effect. If human milk is not available, then the prognosis as regards the premature child is graver. The amount of cow's milk given ought not to exceed four teaspoonfuls at a time, and the intervals ought not to be longer than one and a half hours. Sterilization of the milk is a *sine qua non*. As to the exact modification of the milk, opinions differ.

As regards artificial respiration at birth, the Schultze swinging movements are not suited to the premature infant, and a better method would be the alternate flexing and extending of the trunk of the child as it lay upon the palms of the obstetrician's hands. The infant ought to be wrapped in cotton wool while this is being carried out.

If the obstetric operation—induction of premature labour—is to hold its own against symphysiotomy and the Cæsarean section, it is essential that the infantile mortality and morbidity be greatly lessened. Further, the steady fall in the birth-rate in the British Isles, as well as in some foreign countries, and in our own colonies, has caused an appreciation in the value of the premature infant. In 1871 the birth-rate was nearly 35 per 1000, whereas it had fallen to 28·5 in 1901, so there is a pressing need to conserve the lives of the infants, even though they are born prematurely.

Drs Milne Murray, KeppieaP terson, Haultain, M'Vie and James Ritchie took part in the discussion which followed.

Dr H. Oliphant Nicholson read some "Further Notes on the Use of Thyroid Extract in Puerperal Eclampsia and the Pre-eclamptic State."

In a previous paper he had brought forward some evidence to show that it was possible to connect the occurrence of some

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cases of eclampsia with inadequacy of the maternal thyroid gland. He attempted then to show that the chief symptoms of the eclamptic state could be explained in terms of thyroid inadequacy. Special stress was laid on the fact that the arrest of the secretion of urine, by allowing the absorption of toxines, led up to the convulsions. He had pointed out some of the ways in which the thyroid gland might, under normal conditions, participate in controlling efficient renal action, and indicated how a deficiency in iodothyrin towards the end of pregnancy might result in anuria.

In this view he advocated the use of thyroid extract in the pre-eclamptic state and also after the onset of convulsions, but in the latter condition a large dose of morphia was a valuable adjunct, as inhibiting metabolism, it stopped the formation of poisons.

During the last few months Dr Nicholson had had the opportunities of testing more fully the efficacy of thyroid extract in such cases, and related the histories of four cases:—

(1) A case of eclampsia in a primipara, at the beginning of the eighth month of pregnancy. All the characteristic symptoms —headache, anuria, albuminuria, solid œdema, etc.—were present to a very marked degree. Treated by morphia (⅓ grain) after the first fit, and subsequently by thyroid extract. Recovery, with rapid disappearance of the symptoms. Patient was delivered of a premature dead-born child.

(2) Further notes were given of the first case of eclampsia treated by thyroid extract, and previously reported. This patient has reached the eighth month of another pregnancy, and from its commencement has taken thyroid extract continuously with entirely satisfactory results. She stated that she had felt altogether different in this pregnancy—no sickness; no swelling of face, arms or body; no blindness or headache.

(3) Case showing treatment of the pre-eclamptic state. Primipara, aged 23, in a typically pre-eclamptic condition early in the seventh month of pregnancy. Complete disappearance of all the symptoms under thyroid extract. Delivered of a premature dead-born infant.

(4) A case of puerperal albuminuria, with diminution in the quantity of urine and other symptoms, treated with thyroid extract.

The results in the above cases were too definite and striking to be ascribed to mere coincidence. It is important, however, to use a preparation of the thyroid gland which can be absolutely relied upon. Tabloids vary in the amount of iodothyrin which they contain, and also deteriorate on keeping. Thyroid extract is not a dangerous remedy, unless in exceptional cases.

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and then because a degenerated myocardium may find it difficult to respond to the needs of an accelerated beat. Patients react very differently to the drug, and those suffering from goitre, myxœdema, or any other condition of hypothyroidism are peculiarly sensitive. In eclamptic subjects symptoms of thyroidism are sometimes very easily induced.

Many of the symptoms which patients develop under thyroid treatment are probably due to the profound circulatory changes produced by the drug. The earliest and constant effect is to cause a marked acceleration of the pulse-rate, and this is followed in a few days by increased warmth and flushing of the skin, due no doubt to the uniform enlargement of the calibre of the arteries. Ultimately there is increased diuresis, but this is a later effect in eclamptic cases so treated. Dr Nicholson did not think that the mere effect of enlarging the calibre of the arteries by thyroid extract was enough to account for the removal of the other symptoms. In eclampsia the action of the remedy would appear to be something of the nature of a specific, and possibly by favouring metabolism in some unknown way, it is able to exert some control over the condition. It might also assist in the removal of urea and other urinary products which had accumulated in the tissues previous to the onset of the convulsions.

Dr F. W. N. Haultain thought that it was a most unfortunate occurrence for Dr Nicholson's theory that the two children should have been dead-born, as it has often been noted that after the death of the fœtus, albuminuria ceased. He thought that in eclamptic cases the primary cause lay most probably in the liver, and not in the kidneys at all. When the fœtus died, the extra activity of the liver ceased, and the thyroid then acting as a vaso-dilator, the poison was more rapidly eliminated.

Dr Milne Murray stated that there were many women who suffered from albuminuria without having any eclampsia.

After Drs Keppie Paterson, Ballantyne, and M'Vie had spoken, Dr Nicholson replied.

Glasgow Medico-Chirurgical Society

THE tenth ordinary meeting of this session was held on February 21—Dr W. G. Dun, the President, in the chair.

A very large audience gathered to hear Dr John Macintyre give a description of some of the modern electro-therapeutic and photo-therapeutic measures. Dr Macintyre first of all discussed the principles underlying remedial measures of this

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kind, and then gave a demonstration of a number of new forms of apparatus employed for this purpose.

THE eleventh ordinary meeting was held on March 7, the President (Dr W. G. Dun) in the chair.

Dr Newman described three cases of aphasia due to skull injury, two of which were rapidly cured by operation :—

(1) James N., 23 years, admitted February 6, 1902, as a result of a cycle accident. He was unconscious, but there was no paralysis. On the third day he had one fit, and three in the night. Consciousness returned on the fourth day, but he was aphasic. On the ninth day he had forty-nine fits, and next day there was slight paralysis of the right arm and leg. Dr Newman trephined him that day An ounce of dark fluid blood was evacuated from under the dura. The fits ceased, and next day he began to mutter. The power to use words returned at the tenth day.

(2) A lad aged 14 years, brought in on February 20 with a fracture of the skull, due to an explosion of gelignite. Four days later he had convulsive fits on the right side. On the thirteenth day Dr Newman elevated the fractured bone and evacuated a large quantity of blood and then drained by small tubes. The fits ceased and consciousness returned. He was aphasic for twelve days later.

(3) A man, suffering from the result of a cycle accident, was not operated upon, and remained aphasic for so long a period as four months.

Dr Newman remarked that it was clear from these cases that surgical means gave a much more rapid cure than Nature's methods.

Dr Alex. Robertson commented on these cases, and congratulated Dr Newman on his success with the first two. As regards the last, he thought it was possible that there might be no organic (gross) lesion in some of these cases, but the aphasia might be due to mere nervous shock.

Dr Lindsay Steven referred to another case where there was aphasia and Jacksonian seizures, and where Mr Luke operated and found a large cyst. The patient spoke next day.

Dr W. K. Hunter referred to the fact that in case No. 1 the power of writing returned before that of speech.

Dr Rutherford called attention to the fact that in these cases the irritative phenomena increased as time went on, and gave it as his opinion that the bleeding then continued.

The President also spoke, and Dr Newman replied.

Dr Lindsay Steven described a case of pericardio-medias-

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tinitis of tubercular origin in a child, a condition which, he remarked, was not uncommon. The patient was a girl, aged nine, admitted to the Royal Infirmary with pain in, and distension of, the abdomen, and moderate fever. A month later pericarditis developed, with friction and increased cardiac dulness. The friction went, but the dulness remained, and indeed grew greater. The patient was always very dull and apathetic. Dropsy and cyanosis set in, and at length there was great ascites, needing tapping. The veins of the neck were engorged, and apparently the mediastinum was involved. *Post-mortem*, there was a great hyperplasia of the mediastinal connective tissue. This hyperplasia extended to the abdomen, and the liver was bound to the diaphragm. There was a well-marked tubercular peritonitis. The whole of the thoracic and abdominal organs were shown. (2) Dr Steven also showed the brain from an old-standing case of mitral stenosis, where an extensive hæmorrhage had taken place as the result of an embolism of the right middle cerebral artery. The patient was a girl, aged 14, admitted for mitral stenosis and regurgitation. Embolism of the cerebral vessels took place, and led to a very profound hemiplegia of the left side. She lived two weeks longer, becoming comatose at the end. The *post-mortem* showed an area of red softening and a large gelatinous red mass, the result of recent hæmorrhage, filling all the right lateral ventricle.

Dr Newman showed a new form of secondary portable battery for the simultaneous use of electric light and cautery, with four cells which could be arranged in various ways by a switch-board.

Dr Walker Downie described a method of preventing the deposition of moisture on the laryngeal mirror, other than by heating. It consisted in pencilling over the mirror with a *crayon de buie*, which consists of a pencil having, instead of lead, a yellow waxy core with a smell like soap. After this is rubbed on, the glass simply needs to be polished with a cloth, and will then show no film of moisture although breathed upon.

THE twelfth ordinary meeting was held in the Western Infirmary on March 21—the President, Dr W. G. Dun, occupying the chair. There was a large attendance.

Sir Hector Cameron showed a case of hæmophilia at present under his care for epistaxis. He was a man, aged 35, and one of a family of three sons and one daughter. His two brothers were "bleeders" too. He first showed the tendency at the age of 7. Being a cabinet-maker, he had had many small cuts and injuries in the course of his life, and always lost much blood, not at the time, but commencing three or four days later. In the

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present instance he had received a slight injury to the nose on March 8th, had begun to bleed a few days later, and had been in hospital since, with more or less continuous epistaxis. Chloride of adrenalin had been tried, but had not proved more efficacious than other styptics. Sir Hector Cameron pointed out that there were three points of clinical interest in this case:—

1. At the time of any injury he bled no more than a normal person would.

2. A few days later he would begin to feel ill, and the bleeding would begin and go on for some weeks.

3. The patient could always predict when the bleeding was going to cease, not by diminution in its amount, but by his constitutional feelings. He felt that the illness was passing off, and then the bleeding ceased. His sister married, showed no hæmophilia, but transmitted it to her little boy.

Sir Hector Cameron next showed an ovary and Fallopian tube removed from a man, and described the case. The patient, an engineer, aged 28, and married, was admitted first in spring 1901, for severe attacks of pain in the right iliac region. First noticed at the age of 15, they ceased till 25, since when they had frequently recurred. It was surmised that this was a case of recurrent appendicitis. There was no tenderness or swelling in the region. The genitals were not examined. The abdomen was opened, and the appendix appeared healthy though rather long. It was removed. That night he could not make water, and the house surgeon in passing the catheter found the right side of the scrotum empty. The testicle was not in the canal. The patient went out, and presently the pain returned, and it was observed that it occurred every month. After four months he came back, and the abdomen was again opened. A long narrow uterus was now found behind the bladder, having attached to its right corner a Fallopian tube with fimbriated end, and a well-formed ovary. There was nothing on the left side. The tube and ovary were removed. Recovery was good. The penis and prepuce and scrotum were well formed. The prostate was large, bilobed and low down. The breasts were very large, with distinct areola and gland tissue. The patient has normal sexual appetite, and connection with emissions. Sir Hector said he considered the body in the left half of the scrotum a testicle, because he could feel a well-marked epididymis and vas deferens. They had not yet had any positive proof that the seminal fluid contained spermatozoa, but he was inclined to regard this as a case of true lateral hermaphrodism. The patient had had no children.

Professor Muir said there was no doubt that the structure

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removed was an ovary, because he was able to demonstrate ova quite distinctly, though they were not so numerous as usual. The Fallopian tube, too, was of normal structure. Microscopic sections of both were shown.

Professor Stockman showed a case of large aortic aneurism treated by gelatine injections. The patient was admitted to his ward nine months ago, and had been continuously under treatment. He had, when brought in, a large pulsating swelling projecting through the manubrium sterni, lifting up the end of the clavicle, and causing much pain. He had had a good course of iodide of potassium before this. Subcutaneous injections of gelatine were at once begun, commencing with 15 grains and ending with 80 grains of gelatine per diem, dissolved in about 200 c.cm. of sterile saline solution. They caused no pain, and were usually absorbed in about thirty minutes. This was combined with complete rest in bed. The result was that the swelling decreased greatly in size, the pulsation almost vanished, and the pain disappeared. Casts illustrating the physical conditions on admission and at the present time were shown.

Dr Stockman next showed specimens of urine from a case of chyluria. The patient, who had formerly been a sailor, had not lived out of Glasgow for twenty-five years. The milky urine as a general rule was passed by him during the night; if by day only after he had been asleep. It varied, however. The condition had lasted three years, and the general health was good. No filariæ had been found. The urine could be cleared by ether, which removed the fat.

Dr Stockman last of all showed specimens from a case of indicanuria. The patient was a young man. The urine was a very distinct blue, sometimes of a greenish tint, and the pigment was soluble in chloroform and in amylic alcohol. The blue colour had also been got from the fæces.

Dr Walker Downie showed two cases of nasal deformity which had been treated by subcutaneous injection of paraffin. The cases were both syphilitic destruction of the bridge. Two drachms of paraffin (melting-point 104° F.) were injected into the subcutaneous tissue of the nose, and moulded into shape. Excellent results were obtained.

Dr Mackintosh (Superintendent) showed a large number of patients suffering from lupus who had been treated by Finsen's method and high frequency currents. Photographs were shown in each case depicting the condition on admission. The lateness of the hour prevented full justice being done to this excellent demonstration.

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THE thirteenth ordinary meeting was held on 4th April—Mr Maylard, Vice-President, in the chair.

Dr Kerr Love showed cases illustrative of the mastoid operation in some of which skin-grafting of the tympano-mastoid cavity had been performed.

1. A girl, who had had measles six years before, with continuous discharge from the ear, with a granulating mass eroding the tegmen tympani and exposing the dura. The mastoid operation was done (14th December 1901), and after a fortnight skin-grafting of the tympano-mastoid cavity carried out. The result was extremely satisfactory, the hole being completely filled up.

2. A girl, aged 14, suffered from chorea two years previously, and since then had had chronic suppurative disease of the middle ear. The radical operation was done, the wound split, and skin-grafting done, with excellent result.

3. A boy who had an acute mastoiditis in November 1901, with no discharge practically. A partial operation was done for the tenderness and high temperature. A good recovery ensued.

4. A boy of 10, in which the radical operation was done, but without subsequent grafting, and in which the middle ear skinned well naturally. The condition had developed after scarlatina.

5. Boy of 4½, with tuberculous disease of the middle ear. He was operated on in October 1901 in a partial manner, and a thorough mastoid clearance was done in November, immediately after which, unfortunately, facial paralysis developed. It is now wearing off.

Dr Love said that the radical operation was always advisable, if palliative treatment (curetting of middle ear and removal of ossicles) does not quickly relieve. The posterior bony wall of the external auditory canal should be split, and for rapid cure all disease must be cleared out, and a smooth, unilocular cavity left; access to it being had by the split canal.

The instruments for the grafting were shown, the grafts (about the size of a half-crown) being applied to the bare bone. The grafts are drained free of fluid above and below, and covered with gold-foil.

Dr Connal and Mr Maylard spoke on the cases, and Dr Love replied.

Dr Alex. Maclennan showed two cases of the removal of the superior row of the carpal bones for acute septic arthritis.

1. Case of a stoker, with septic wound, nearly separating the thumb. The superior row of carpals (excepting the pisiform) was removed. The wound was filled first with pure carbolic acid, then washed out with methylated spirit, and then stuffed,

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and the packing removed some days later, under chloroform. Some months later some freeing of the tendons was done, and the freed tendons surrounded by gelatine steeped in formalin.

2. Boy, aged 9, with cellulitis of whole of left hand. The swelling went down after incision, but the superior row of carpals became eroded and was removed.

3. Man, aged 47, with a multiple condition (foot, knee and hand), possibly gonorrhœal. The carpal bones (upper row) here too were removed. The radio-ulnar joints were also affected slightly.

Dr John Fergus gave an account of the outbreak of plague in the Central Hotel last autumn.

Glasgow Obstetrical and Gynæcological Society

THE sixth ordinary meeting was held on February 26—Dr Jardine, the President, in the chair. The attendance was small.

Dr A. W. Russell showed a cyst of the round ligament, which had shown itself in the inguinal canal, and which suggested the possibility of its being a herniated ovary.

Dr Edgar showed a uterus with cervical carcinoma removed by vaginal hysterectomy. There had been no hæmorrhage, and the condition was discovered almost by accident. The uterus was very adherent to the bladder.

Dr Jardine read an account of labour in a case of uterus bicornis and double vagina. Examination showed apparently a single vagina and cervix and a double uterus, the right and posterior part being enlarged, the left and anterior portion being the smaller. When labour began, the os was found dilated, but nothing presented. Quite by chance Dr Jardine's finger entered a second narrow channel just inside the site of the hymen. This was a second vagina, and at the top of it was a second cervix with the presenting part. It dilated slowly; a large Barnes' bag was then used. This led to rupture of the vaginal septum, and the child was delivered by forceps. Puerperium normal. Spermatozoa probably entered by the narrow undilated vagina.

Dr A. W. Russell described a case of uterus septus with double vagina in which pregnancy was completed normally after removal of the vaginal septum. The patient was a primipara, aged 27. She became pregnant, but apparently aborted after two months. Dr Russell then removed the vaginal septum completely. She soon became pregnant, had a hæmorrhage

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(said to be an abortion) at two months, and was delivered at the eighth month of a healthy child. The uterine septum gave way in the later part of the pregnancy.

Dr Monro Kerr read notes of nine cases of successful Cæsarean section. Last year, he remarked, no fewer than nineteen sections had been done in the Maternity Hospital. Details of his cases, as regards size and form of the pelvis, age and parity of the patient, former obstetrical history, and results to mother and child, were then given.

THE seventh ordinary meeting was held on March 12—the President, Dr Robert Jardine, in the chair. There was a large turn-out of Fellows, and the evening was devoted to a discussion on the Treatment of Abortion, which was opened by the President, and in which Drs Sloan, Edgar, Russell, Stark, Munro Kerr, Stewart, Scott-Macgregor, Borland, Rankine, and Miller took part.

THE eighth ordinary meeting was held on March 26, the President in the chair. Dr Thomas H. Bryce gave a most interesting lantern demonstration on embryology. He showed: (*a*) the process of extrusion of the polar bodies, and of fertilisation in the eggs of the sea-urchin. The egg itself was $\frac{1}{187}$ inch in diameter, and micro-photographs were shown with the extrusion of first one and then a second polar body. Other slides showed the entrance of the sperm, the formation of the ovum-cell and sperm-cell (male and female pro-nucleus), the fusion of the two, and the formation of the morula up to the period of division into sixteen.

Dr Bryce next exhibited slides showing: (*b*) the anatomy of an early double chick, and (*c*) the formation of the chick-embryo on the blastoderm from the twenty-fourth to the forty-eighth hour after incubation. By means of the projection-microscope the actual specimens were exhibited. Finally he showed beautiful serial sections of a mammalian embryo (rodent), and of the human embryo at the age of six weeks.

Dr Sloan moved a vote of thanks to Dr Bryce for his interesting demonstration, which was heartily accorded.

Dr John Lindsay showed a series of lantern-slides of microscopic sections of an early embryo, illustrating mal-development associated with albuminuria. He had been able to get two embryos at different times from the same patient—one when she was albuminuric and one when in ordinary health. Each was about the fifth week of development.

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Glasgow Southern Medical Society

THE twelfth ordinary meeting was held on February 20, the President (Dr John Stewart) in the chair.

Dr E. A. Gibson read notes on three cases of abdominal section :—

(1) Miss R., aged 37, was seen by him on account of sudden dysuria and retention. The menstrual history was quite normal. Examination showed the presence of a hard tumour the size of a cocoanut behind the uterus and pressing it forward. It was fairly mobile. The diagnosis of a fibroid was made, and vaginal hysterectomy performed in August 1901, when the uterus and tumour were removed, the ovaries being left. Recovery was uneventful.

(2) Miss L., aged 35, consulted Dr Gibson for the same cause, and had a similar menstrual history. In this case the uterus was the seat of a large number of interstitial and sub-peritoneal fibro-myomata, and was removed by vaginal hysterectomy in November 1901, the ovaries being taken away at the same time. A good recovery followed.

(3) Mrs M., aged 24, was operated on on account of the presence of a bilateral boggy tender mass in the pelvis, with a history of menorrhagia and dysmenorrhœa. Laparotomy showed the presence of a double pyosalpinx, which was removed and a satisfactory convalescence ensued. A short discussion followed.

Dr Andrew Wilson read an excellent little paper on the prevention and treatment of conjunctivitis in the new-born. After briefly tracing the early history of this disease and referring to Gibson's investigations, he mentioned the view formerly widely held by Saunders and others that the disease was essentially an erysipelas. As a matter of fact it might arise from various causative agents, but the most common and important was gonorrhœal infection. It was a serious condition. Usually it was on the third to fifth day after delivery that it was fairly developed. If it occurred distinctly at birth it was likely due to premature rupture of the membranes, but such cases were not common. Even a favourable case took from three to four weeks for complete recovery, and a much longer time might be needed. The great risk was corneal ulcer leading to opacity and to all degrees of loss of visual acuity.

Crédé in 1882 introduced his well-known system of preventive treatment, in which, immediately after birth, the child's eyes are wiped clean and a drop or two of 10 per cent. silver

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nitrate solution instilled between the lids. When the disease is established the eyes must be thoroughly and frequently cleansed to wash away the pus. Mercury bichloride (1-10,000), formalin (1-2000), or boric lotion may be used, but the washing is of greater importance than the lotion. The lids should then be painted with a 20 per cent. solution of protargol (a silver-vegetable preparation), which causes less pain and staining than do the inorganic silver compounds. The edges of the lids should be smeared with iodoform vaseline, and for slight corneal opacities the yellow oxide of mercury may be tried.

THE thirteenth ordinary meeting was devoted to an address given by Dr Robert Pollock on his experiences in connection with the South African war. It was illustrated by lime-light views, and enjoyed by a large audience.

THE fourteenth ordinary meeting was held on March 20th—the President, Dr John Stuart, in the chair.

Dr M'Call Anderson opened a discussion on the Curability of Phthisis Pulmonalis. He said his views on the matter were already pretty well known. In the matter of diagnosis one might rely either on the finding of the tubercle bacillus in the sputum or on the reaction to tuberculin; the latter, he considered, was employed far too little. Treatment might be symptomatic, or general and curative. The most important symptom from the patient's point of view was the cough Cough mixtures should be avoided. If any was given, let it be a dose of codeia at bedtime, a hypodermic injection of atropine, or a sedative inhalation. For cure, we might use the new tuberculin, or rely on sanatorium treatment. The choice of a sanatorium was of some importance. It should be accessible, the climate should be as like as possible to that of the patient's ordinary dwelling-place, the mean range of temperature ought to be small, the site elevated, the soil gravelly, and the exposure to the south. Exercise ought to be carefully supervised, and when the temperature was up, the patient ought to be confined to bed. In conclusion, he considered phthisis an eminently curable disease, and thought about 50 per cent. of the cases could be restored to health if sent early.

Dr George Middleton, who followed, said he regretted he could not share in the optimistic hopes of the previous speaker, and felt it his duty to sound a warning note on this point. While firmly believing that phthisis could be cured, he confessed he was not very happy about the results of sanatorium treatment, though it was probably the best kind available. A great deal

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depended on the personal equation of the patient, the particular type of the disease, and its stage. Cases that might reasonably be expected to do well did very badly. He considered we were not yet in a position to give good and cheerful prognoses to our patients, and he considered it wrong to be lightly optimistic on the matter.

Dr Hamilton said he thought that at all events a good fight should be made on behalf of the patient. The use of creosote and guaiacol internally, of formalin vapour inhalations, and of open-air treatment, were all at their disposal, and he considered the disease could be cured. He advocated a more systematic early examination of the sputum in cases of apparently simple catarrh of the chest. Drs Robertson, Burgess and M'Gillivray also spoke.

The discussion was continued at the fifteenth ordinary meeting of the Society (April 3), under the presidency of Dr Stuart, when Dr Ebenezer Duncan (Victoria Infirmary) introduced the subject for debate. He referred to the view held by the earlier physicians, such as Lænnec, Latham and Stokes, that phthisis was an incurable disease. Reference was made to Boddington, one of the earliest writers on the open-air treatment, and details then given, drawn from the speaker's experience of thirty-five years' practice. He said he had no doubt whatever as to the curability of phthisis. In treatment he used large doses of creosote in cod-oil (5 minims to the drachm), carbonate of guaiacol, high feeding, and fresh air. Inhalation of pinol, eucalyptol and creosote were also of use. Formalin he thought worthy of a full trial.

Dr Watson spoke on the relation of medical men to the public in reference to this point, and deprecated the highly optimistic statements too often made by professional men at meetings of Societies for the prevention of tuberculosis.

Dr T. K. Monro (Royal Infirmary) spoke on the various types of phthisis which might be met with in the acute forms of the disease. He considered it curable, but prognosis should be guarded. Cases that showed hæmoptysis early generally did pretty well.

Drs John Forrest, MacDonald, Tyndall, etc., spoke, and Dr Duncan replied.

Forfarshire Medical Association

THIS Society met in the University College, Dundee, on Thursday, April 4th, at 4 P.M.—Dr A. J. Duncan, Ex-President, in the chair.

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Dr Buist showed an abortion passed in its entirety, having some points of interest.

Professor Kynoch showed large fibroid tumour of the uterus removed by panhysterectomy.

Dr Foggie read notes of two cases of cerebral paralysis in children. One related to a girl aged 7 of premature birth and of syphilitic family, who showed the characteristic phenomena of the spastic paraplegic type of cerebral diplegia. Recent research, while somewhat divided as to the possible initial lesions in this disease, seemed to regard a degeneration of the cortical neurones as the commonest resultant.

The second case was of interest so far as it referred to a girl of 9, who as the result of convulsions at the age of 4 had suffered from a right hemiplegia which had now all but cleared away except for slight weakness and a distinct tremor of right arm. The tremor was hardly present when she was at rest but was easily brought out by purposive movements.

Dr G. T. Guild read a paper on "Inflammation of the middle ear." In it he divided the affection into two stages: (1) Before perforation. (2) After perforation of the tympanic membrane. In the first stage he dealt first with severe purulent inflammation such as is found in scarlet fever, measles or diphtheria, and in this he strongly recommended early incision in order to limit the inflammation and prevent sloughing of the membrane. He emphasised the advantage of routine examination in these diseases as the local condition is so frequently masked by the general symptoms of the disease. Where pain is severe or continuous, with fever or head symptoms without suppuration, incision is required; and thirdly, in milder forms of inflammation with bulging of the tympanic membrane or retained secretion with deafness, incision may be required.

He then passed on to the consideration of cases where perforation has occurred, and grouped them according to the situation or size of the perforation.

If the perforation be small or centrally placed, enlargement to ensure free drainage is all that is required; but in cases where the perforation is high up, due probably to suppuration in the attic, then excision of the ossicles is required. If, however, in spite of this treatment there still remains a foul-smelling discharge, then its origin must be sought for and proper surgical treatment undertaken for its radical cure.

In the treatment of all cases, a patent eustachian tube, he pointed out, was of the greatest importance for efficient removal of the secretions from the tympanic cavity.

In conclusion he advocated exact diagnosis and appropriate treatment of the different varieties of this complaint, not only in

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order that hearing may be preserved, but also that the risks of secondary complications may be minimised.

Dr Buist and the Chairman made some remarks on the paper.

Dr M'Gillivray read notes on adrenalin chloride in ophthalmic practice. He spoke of the drug in the highest possible terms as a hæmostatic and also as an adjuvant in producing cocain anæsthesia, especially when dealing with highly vascular tissues. On the other hand, the results obtained from the drug, when used purely as a therapeutic agent, were not up to his expectations. In certain conjunctival and episcleral affections he had seen benefit from the free use of 1 in 10,000 solution, but in deep-seated affections, such as iritis and glaucoma, where one would expect considerable benefit from the use of such a powerful vaso-motor, the speaker could not refer with encouragement to its efficacy.

Dr Buist spoke favourably of its use in operations in which there was considerable uncontrollable oozing, obscuring the field of operation.

Professor Kynoch supported Dr Buist's remarks.

Dr Mackie Whyte spoke of the value of suprarenal extract in severe hæmoptysis of phthisis.

Dr Gray gave notes of a case of strangulated ventral hernia on which he had operated, in very unfavourable circumstances, with success. The hernia was in the right linea semilunaris. The unusual situation and the contents, viz., small intestine, were commented on, and statistics of ventral herniæ in this situation were given.

Professor Kynoch and Dr Halley spoke on the paper, and Dr Gray made some remarks in reply.

Editorial Notes and News

Th Carnegie Gift. MR CARNEGIE'S millions will not last long if the various University Courts have the spending of them. Glasgow asks for £95,000, Aberdeen for £22,000; Edinburgh for £45,000, Dundee for £66,000, whilst St Andrews does not formulate an amount, but is apparently ready to take all she can get. These sums are capital, and are asked for in the next year or two.

The annual sum requested by Glasgow is £15,000, Aberdeen £19,000; Edinburgh only asks for £9000 directly, but asks for information to enable her to apply for more. Dundee is comparatively modest in her request for an annual grant, about £3000

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being asked for. St Andrews makes no definite request, but there are so many suggestions for new Chairs and Lectureships that probably at least £7000 would be required.

We thus have an annual demand from the University Courts exceeding the sum available for all the Educational Institutions in Scotland by £3000, while the sums asked for on account of capital expenditure amount to nearly a quarter of a million. The statements issued by the Courts vary from the modest four pages of Edinburgh to a stately volume from St Andrews, containing no fewer than fifteen appendices, and amounting altogether to forty pages.

There is remarkable unanimity in the importance attached to Physics, as all the Universities emphasise the need for a Physics Laboratory, and there can be little doubt that in that department our Universities have fallen considerably in arrears.

All the Courts direct special attention to the desirability of Research Scholarships and plenty of them. We are not among those who have unbounded faith in these Research Scholarships. As Mr Dooley remarks apropos of the Carnegie, Rockfeller, and other donations, "You can lead a man to the University, but you can't make him think," and we are sure most is done on the commercial principle of payment by results.

The Faculty of Medicine in Glasgow recommend Research Scholarships in each and every department of Medicine with the extraordinary exception of Obstetrics. Surely, even in Glasgow, finality has not been reached in that subject.

Aberdeen contemplates the promotion of Research by an increase in the number of the professors' assistants, so that more time will be available for Research. It seems a good plan, provided the enthusiasm is kept up. It is suggested that the annual re-nomination of an assistant should be dependent upon his progress in Research work. We certainly believe that many of the student Scholarships, awarded on the result of the ordinary professional examinations, are simply money thrown away.

The various statements contain so much, that it is impossible to deal with them in the limited space at our disposal this month. One sentence in the report from the Faculty of Law in Glasgow might be seriously considered by the Medical Faculties in all the Scottish Universities.

"We concur in the opinion that the same measure and degree of endowment is not necessary in the case of Chairs that may be instituted in the Faculty of Law as is necessary in the case of Chairs instituted in the other Faculties of the University,

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provided that the conditions of the tenure of the Chairs do not interfere with the practice of their profession by the occupants of the Chairs."

We see no reason why extra-ordinary Chairs should not be founded with very small endowments, and be financed as are the Lectureships at present.

Mr Rhodes' Will. TRULY education is in luck's way just now. Mr Rhodes has not left any money to Scotland, but he has given Edinburgh a testimonial for which we are modestly grateful. The instruction to the University of Oxford to try and make its Medical School *at least as good* as Edinburgh is thoroughly appreciated in Edinburgh.

Like many other paragraphs in the will it throws a curious side light on the testator's mind, for until the population of Oxford at least quadruples it can never provide a really complete medical education.

We do not altogether regret Mr Rhodes' decision not to send any of his students here. There are some who fear that Mr Carnegie's scheme will divide the students into two social classes, and a third class of Colonial Aristocrats with £300 a year to spend would have been an additional terror. If the trustees in the exercise of their very wide powers do decide to send any of their scholars to Edinburgh, we trust that they will reduce the scholarships by at least a third.

The R.A.M.C. THE New Medical Warrant has been issued, and we recognise it to be an earnest effort to place the R.A.M.C. upon a higher level than hitherto. In particular, the profession must appreciate the importance of the rank given to the Director-General, who now occupies a position worthy of the highest officer in the Medical Service—we trust the position will be worthily filled. Such rank held by a strong man should do much in itself to strengthen the R.A.M.C.

The examination bogey, foreshadowed by the report of the expert Committee, has been considerably modified, and should not now have the deterrent influence upon young graduates who propose to enter the Service, which many feared it would have. The inducements to, and facilities for good work being done by members of the corps have been increased, and the proposed recognition of, and promotion for services in the field and laboratory, will stimulate officers to work at their profession. We consider this an enormous advance. Much indeed in the new Warrant augurs well for the future, and we think it would be gracious at least on the part of those who are no longer in

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the Service, although interested in its welfare, that this should be admitted.

The optional retirement of officers at the end of three years, and the obligatory entrance into a reserve with a retaining fee of £25 per annum for seven years, does not seem to us a sufficient inducement for men to risk being disturbed in civil life at perhaps inopportune times; but if it be for war service only, probably all men would be glad to give their services to their country in a time of need. Certainly there has been no lack of men for the South African campaign, and so long as the Anglo-Saxon remains what he is, when a part has to be played for the good of the empire, we believe medical men will never be tardy in offering their services.

The Cause of Cancer.

IN our last number Dr Nöel Paton pled for the co-ordination of Medical Research in Edinburgh. It is proposed that there be a co-ordinate research by the whole British Empire into the cause of cancer. The proposal is an admirable one, and if well directed the enquiry ought to be productive of much good. We are not so sanguine as to suppose that organisation alone will solve the problem which so many capable investigators have been working at for years, but undoubtedly much will be learned, and no doubt many of the vaunted "Causes of Cancer" will be finally disposed of. It hardly seems necessary to expend any of the funds on building laboratories. These already exist to a quite sufficient extent; and brains and a logical mind will do far more to solve the question than the most elaborately furnished rooms.

The Midwives Bill.

THE Bill to establish the certificate of the London Obstetrical Society comes on for its third reading on June 4th. The Government has so much contentious business in hand that it is quite likely that by that time it will require the entire time of the House.

The more one inquires into the matter the more is one struck by the utter incompetence of the promoters to deal with the subject. The Charter of the Rotunda, granted by George II., states that "by Admitting and Instructing in such Hospital, Women, who, after some time spent there, being duly qualified, may settle in such parts of our said Kingdom as most stand in need of such Persons, it will be a means of preventing the unhappy Effects owing to the Ignorance of the Generality of Country Midwives." That is the way to deal with the Midwives question. The advisers of George II. were wiser than

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those of the present Edward, for they recognised that training, and not lectures and examinations, was what was required. We are glad to hear that the Edinburgh Maternity Hospital contemplates increasing the period of training, and that practical instruction of nurses and not Diploma manufacturing will continue to be the Scottish method.

We learn from the Medical Press that in the last five years 298 women have been *trained* in the Rotunda. We wonder how many in the same period have been enabled—after paying the fee—to write after their names the letters L.O.S.

Everyone should do his best to persuade those Members of Parliament with whom he is brought in contact to vote against the Bill.

Medical Officers in the Highlands.

TRULY the lot of the Highland Medical Officer is not a happy one. The Parish Council of Clyne recently met for the special purpose of considering whether or not it should dismiss its Medical Officer. Deputations were introduced for and against the proposal, and the results of a plebiscite were submitted—200 voted for the doctor, 14 against, and 32 were neutral. Then the Council divided, when by a majority of one the motion to dismiss the doctor was lost, the voting being four to five.

A letter was read from the Secretary of the Local Government Board pointing out that all the Council was concerned with was whether the doctor attended the paupers of the parish satisfactorily or not. To such discipline no one could object, but, unfortunately, Mr Falconer Stewart went on to point out that the re-election of the Medical Officer at the end of the year was in the hands of the Council, and he suggested that two months' notice should be given. The Medical Officers in the Highlands have many hardships; but the worst of all is their dependence on the favour of the members of twopenny ha'penny Parish Councils, who regard a Medical Officer in the same light as they do their scavenger—if they have one.

It is high time that the Medical Officers in Scotland were given the same security of tenure as their brothers in England and Ireland, and were dismissible only by the Local Government Board.

Bacteriological Diagnosis.

BY a majority of one the Town Council of Edinburgh has confirmed its decision to transfer the reporting on doubtful cases of diphtheria, etc., from the laboratory of the Royal College of Physicians, where it has been done for years to the entire satis-

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faction of the Medical Profession and the Public Health Committee, to three rooms in the Usher Institute. The decision is all the more regrettable, since it is well known that more than one of the absentees from the division was in favour of preserving the *status quo*, and had only one of them been present the casting vote of the Lord Provost would have settled the matter in the way agreeable to those most concerned—the practitioners of Edinburgh.

The Usher Institute is not ready, and apparently the Council expects the College to continue the work as long as may be needed.

Ibrox Disaster.

THE Ibrox Disaster of April 5 caused a profound and painful sensation in Glasgow and the neighbourhood. Altogether over 500 persons were injured, and over twenty deaths occurred. The Western Infirmary bore the brunt of the surgical work, and handled over 200 cases on the afternoon of the accident. I went round all the surgical wards (writes our Glasgow correspondent) a couple of days after the accident, and though they were of course much overcrowded, one could not help being struck by the great orderliness and promptness with which the extra demands were met, and by the cheerfulness with which the sufferers bore their injuries. Of the latter, the majority in hospital are serious, such as simple and compound leg-fractures, severe injuries to skull and face, and internal lesions. In one surgical ward I visited nearly every case had hæmaturia.

The Vacancy at the Western.

THE retiral of Dr Alex. Patterson creates a vacancy as full surgeon to the Western Infirmary and several candidates are in the field. The Glasgow system differs from that usually followed, where a vacancy is filled by the promotion of the senior assistant surgeon. In Glasgow a vacancy such as the present is filled by open competition.

There are no doubt faults in all systems, but we venture to think that the promotion system is on the whole the best. No doubt it does not follow that a man qualified for the post of assistant surgeon is the most suitable candidate for the full surgeoncy—perhaps twenty years later—but it must be conceded that he generally is. Perhaps the best system would be the one which combined the theory of Glasgow with the practice of Edinburgh and most other places, the vacancy being filled by custom by

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the senior assistant surgeon, unless there were reasons to the contrary.

The four assistant surgeons to the Western, Drs Kennedy Dalziel, J. H. Nicoll, Robert Kennedy, and Duncan M'Cartney, are all candidates, and we understand that Dr T. Kennedy Dalziel will probably be the one chosen.

Endowment of Aberdeen Royal Infirmary.

LORD MOUNT STEPHEN has intimated his intention of handing over securities sufficient to insure an annual donation of £1000 to the Infirmary. The donation has not the glory of a new wing, but it will be a lot more useful to the Institution.

Aberdeen University

THE Graduation Ceremony was held on April 10th.

Among the recipients of the Honorary Degree of LL.D., was Sir Thomas Barlow. Professor Kennedy, Dean of the Faculty of Law, in introducing him, said—"I present first for the degree of Doctor of Laws, a distinguished member of the faculty which mainly flourishes in this University, Sir Thomas Barlow, Bart., M.D., F.R.C.P., K.C.V.O., Professor of Clinical Medicine in University College, Physician to the University College Hospital and Physician to His Majesty's Household. This record speaks for itself. Sir Thomas Barlow graduated with honours both in medicine and surgery, and his professional brethren know well the value and merit of his contributions to medical literature. Perhaps the general public know and recognise his services chiefly in connection with the London hospitals, and particularly his work as physician to the Gt. Ormond Street Hospital for Children. In these institutions Her late Majesty took a very lively interest and the present King continues to do so. Both our late Sovereign and King Edward have expressed their sense of Sir Thomas Barlow's professional standing, their appreciation of his public work and the confidence of more intimate personal relations by the distinctions which they have conferred upon him. I think our University, in following such high examples, will do honour not less to Sir Thomas Barlow than to ourselves."

DEGREE OF DOCTOR OF MEDICINE (M.D.).

Barron, Archibald Campbell, M.B., C.M., Dailly, Ayrshire. Thesis—"Intestinal Sand, its Genesis and Clinical Interest."

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* Black, Robert Sinclair, M.A., M.B., C.M., Robben Island, Cape of Good Hope. Thesis—"Leprosy in South Africa; with Researches and Observations, Clinical and Pathological." * Fraser, Henry, M.B., Ch.B., City Hospital, Aberdeen. Thesis—(1) "Experiments with the Schumburg Method of Water Sterilization"; (2) "Hepatic Cirrhosis in Association with Multiple Adenomata" [under the New Regulations]. * Keyt, Frederick Theobald, M.B., C.M., British Honduras. Thesis—"Bush Therapeutics in vogue in British Honduras." Milne, Alexander Gordon, M.B., C.M., Water Lodge, Rodley, near Leeds. Thesis—"Asthma and Allied Conditions considered with reference to Nasal Disease." Myers, John William, M.B., C.M., 8 Sunny Bank, Shipley. Thesis—"Tobacco Amblyopia: with Analysis of 92 Consecutive Cases." Philip, James Farquhar, M.B., C.M., 3 North Avenue, West Ealing, London, W. Thesis—"Melancholia—an Analysis."

DEGREES OF BACHELOR OF MEDICINE (M.B.) AND BACHELOR OF SURGERY (Ch.B.).

With First Class Honours. — Cruickshank, Lewis Davie, Tarves, Aberdeenshire.

With Second Class Honours.—Keith, Robert Donald, M.A., Kinnermit, Turriff; Reid, Alexander Christie, M.A., United Free Church Manse, Ellon.

Ordinary Degrees.—Coetzee, Louis, Kafferskraal, Steynsburg, Cape Colony; Elder, James Bremner, Grange, Keith, Banffshire; Elwell, Harry Willmott, The Vicarage, Combe St Nicholas, Chard, Somerest; Killoh, George Bruce, Ardmurdo, Inverurie; Macleod, Jeannie Charlotte, 318 Great Western Road, Aberdeen; Mahomed, Archibald, 152 Harley Street, London, W.; Rae, James Burnett, 70 Queen's Road, Aberdeen; Robertson, Alexander, Seafield Terrace, Elgin; Robson, Robert Boyd, 25 Cluny Gardens, Edinburgh; Rose, John Stuart, Culfoichmore, Grantown-on-Spey; Slessor, Thomas Stewart, M.A., 62 Bon-Accord Street, Aberdeen; Souter, James, M.A., 229 Great Western Road, Aberdeen; Watt, Alexander, Ardwell, Cabrach, Aberdeenshire.

Diploma in Public Health.—Bisset, William Fraser, M.B., Ch.B. (Aberd.), Aberdeen; Keyt, Frederick Theobald, M.B., C.M. (Aberd.), British Honduras; Nash, Ernest Hunt, M.B., Ch.B. (Aberd.), Stafford (With Credit).

The University Prizes and Gold Medals in the Faculty of Medicine were awarded as follows:—

Fife Jamieson Gold Medal in Anatomy.—Bertie R. G. Russell, Orkney.

* The Thesis of Mr Frederick T. Keyt was considered worthy of "Honours," and the Theses of Messrs Robert S. Black and Henry Fraser of "Commendation."

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Lizars Gold Medal in Anatomy.—Catherine E. Anderson, Ceylon.

Keith Gold Medal for Systematic and Clinical Surgery.—Lewis D. Cruickshank, Tarves.

Shepherd Gold Medal for Systematic and Practical Surgery.—Alex. Callam, Aberdeen.

James Anderson Gold Medal and Prize in Clinical Medicine.—R. D. Keith, M.A., Turriff.

Matthews Duncan Gold Medal in Obstetrics.—R. D. Keith, M.A., Turriff.

On the evening of the graduation day, a very successful and largely attended reception was held by the Principal and Professors of the University in the Mitchell Hall. Special interest attached to this and all the other functions of this year from the fact that the Lord Rector, Lord Strathcona, was present. A. W. M.

Royal College of Physicians, Edinburgh; Royal College of Surgeons, Edinburgh; and Faculty of Physicians and Surgeons of Glasgow, Triple Qualification

THE quarterly examinations of the above Board, held in Edinburgh, were concluded on 8th inst., with the following results:—

First Examination, Four Years' Course.—The following two candidates passed the examination:—James Henry Allan, West Hartlepool, and Isa Charan, Lahore.

First Examination, Five Years' Course.—Of twenty-four candidates entered the following eleven passed the examination:—Ernest Averell, Newcastle; Hector Graham Gordon Mackenzie, Leamington; Herbert Bower, Bradford; Henry Albert Pascoe, Durban; William Wallace Dunlop, Edinburgh; James Sullivan, County Cork; Robert James Martin, County Cork; Elizabeth Mary Cardozo, India; Daniel Kennedy, Cork; Patrick Raoul Eskell, Bath; and James Noonan, Cork; and three passed in Physics, and three in Chemistry.

Second Examination, Four Years' Course.—Of seven candidates entered the following five passed the examination:—Isa Charan, Lahore; Robert Gibson, County Tyrone; Lewis Pemberton Anderson, Ulverston; Alexander Wood, Pencaitland; and Ernest Arthur John Ersser, Aberdeen; and one passed in Anatomy and Physiology.

Second Examination, Five Years' Course.—Of twenty-seven candidates entered the following sixteen passed the examination:—John James Gillis, County Antrim; Gideon Hendrik van Zyl, Cape Colony; Alexander Douglas Fox, Brighton; James Watson, Edinburgh; Ernest Gaunt, Farsley; Martin Arnold Gibbs, Melbourne; James Grieve Cormack, Anstruther (with distinction); James Wilson, Edinburgh; Maurice Michael Fitzgerald, Ireland; Elizabeth Mary Cardozo, India; Robert Murray Fraser, Edinburgh; James Augustus Robertson, British Guiana; George Waller Meade, Cork; Ernest Howard Edward Coghlan, Longton;

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Edward Herrick Knowles, Australia; and Emile Reboul, Drome, France; and one passed in Anatomy.

Third Examination, Five Years' Course.—Of thirty-five candidates entered the following twenty-six passed the examination:—Fritz George Heyer, Melbourne; Donald Cameron, Melbourne; William Ernest O'Hara, Melbourne; Archibald Monteath Laurie, Glasgow; Leonard Bushby Hopper, Liverpool; Michael King, Ireland; William John Shorten, County Cork; John Archbold Turnbull, Guernsey; William Black Hendry, Edinburgh; Joseph van Someren Taylor, China; William James Purves, Hartlepool; Thomas M'Master Glen, Dumbarton; Terence Owens, Calcutta; Patrick Shaw, Victoria; Mutyala Suramulu Naidu, India; James Cullen, Islay; Leo Ferdinand Bianchi, England; Andrew Malachy Walsh, County Waterford; Minnie Green, Norwich; George Alexander Paulin, Edinburgh; William Charles Massy Burnside, County Down; Thomas Russell, Stockton-on-Tees; Behram Burjorjee Bharucha, Bombay; Everard Claye, Manchester; Eileen FitzGerald, Australia; and Kaikursroo Jehangir Bhamgara, Bombay.

Final Examination.—Of sixty-eight candidates entered the following thirty-eight passed the examination, and were admitted L.R.C.P.E., L.R.C.S.E., and L.F.P. and S.G.:—Alice Esther Gilford, Redhill; Wilfrid Edwyne Knight, Dublin; Frank Edward M'Gee, Melbourne; Hastings Footman Everett, Ipswich; Henry Ayrton Chaplin, London; James Linton Johnston, Ontario; John William Cross, Houghton-le-Spring; Elisha Preston Mead, Whitby; Alan Leslie Fielding, India; Philip Henry Mules, Nelson, N.Z.: Robert Walter Joseph Pearson, Ennis; Martin Francis Cusack, Mitchelstown: Arthur Thomas Hoskins, Linton, Victoria; Farris Nusser Jaboor, Syria; Howard Horace Homer Hurdman, Canada; David Patrick Johnstone, County Cork; Alfred Lambré White, Dundee; Leonard Bushby Hopper, Liverpool; John Quin Donald, Edinburgh; Thomas Albert Mendes, Calcutta; Robert Methuselah Stimpson, Jamaica; Reginald Herbert Brierley, Rochdale; Wilfred Albert Wilson, Canada; Thomas Roberts Griffiths, Kidwelly; Daniel Randolph Gonsalvez, Quilon, S. India; Roger Llewellyn Williams, South Wales; Sylvester Lawson Clendinin, Brighton, Ontario; Valiant Galfred Ffrost, Moulamein, N.S.W.; Evan Bidie, India; Edith Boomgardt, India; Lionel Walpole Thomson, India; Thomas Longmore Ashforth, Mossend; Thomas Glasbrook Davies, Trœdrheiv; Debendranath Banerji, Bengal; Thomas Jones Evans, New Ruay; Timothy Francis Heas, Clonakilty; Donald Burrows, Ootacumund, India; and John Anthony Freeman Hatch, Plymouth; and three passed in the division of Medicine and Therapeutics, two in Surgery and Surgical Anatomy, seven in Midwifery, and eleven in Medical Jurisprudence.

University of Edinburgh—Faculty of Medicine

THE following is the official list of passes at the recent professional examinations for Degrees in Medicine and Surgery:—

First Professional Examination.—Mukhtar Ahmed, B.A.; R. G. A. Bagnall, E. H. Black, C. E. Blair, George Blair, I. W. Brebner, S. T. Champtaloup (with distinction), W. I. M. Clark, Agnes M. Cowan, F. S. Cumming, Richard B. Davidson. A. M. Dick, M. G. Dill, A. M. Drennan (with distinction), Robert Duncan, James Dundas, E. W. Dyer, S. S. Dykes, Mary S. Finlayson, C. N. Finn, M. S. Fraser, W. G. Frohlich, G. F. Gallagher, W. J. Geale, Laurence Gibson, G. A. Gordon, M. C. R. Grahame, Joseph Green, J. C. Grieve, G. F. Grogan, George Gunn, Mary D. Hancock,

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A. J. Harper, A. S. Hendrie, H. S. A. Hogg, F. O. Inglis, R. F. Johnson, H. C. Johnston, W. L. Johnston, R. Lloyd Jones, Alexander M'Donald, D. F. Mackenzie, John B. Mackenzie, I. R. Macleod, George M'Mullan, A. C. B. M'Murtrie, W. J. M'Nab, A. S. Mactavish, J. N. M'Turk, David Mann, G. M. Melville, Hugh Millar, F. C. Mills, B.A.; John Morris, Janet M. Murray, J. K. Murray, R. H. Nolan, Ethel A. Olchard, J. S. Orwin, A. S. Paterson, H. B. Porteous, C. A. Purnell, G. Y. Richardson, W. H. Riddell, W. R. Ridley, W. G. Rivers, R. M. Robb, W. G. Robertson, Frank Ross, Alexander Sandison, James Scott, T. H. Scott, H. L. Sells, H. G. Smith, A. G. V. van Someren, H. V. Taylor, W. A. A. Taylor, J. A. R. Thompson, Annie D. Urquhart, V. S. Valiathan, B.A.; Philip Vickerman, R. H. Walton, Andrew Wight, W. E. R. Williams, J. T. D. Young.

Second Professional Examination.—R. G. W. Adams, E. A. Aylward, J. W. H. Babington, J. M. Barkley, R. B. Barnetson, Benjamin Baty, W. P. Beattie, Douglas Bell, L. H. I. Bell, A. R. Berrie, J. M. Beyers, A. S. L. Biggart, F. T. Bowerbank, David Brown (with distinction), T. E. Carlyle, V. T. Carruthers, Mildred M. L. Cathels, J. W. Cathels, G. S. Clark, M.A.; A. G. Coullie, James Craw, W. B. Cullen, George Cunningham, W. H. Cuzack, J. M. Darling, J. R. Dobbin, C. E. Dumanoire, T. H. Easton, N. C. Fischer, J. M. R. Flamet, N. C. Forsyth, R. H. Fothergill, Louis Fourie, A. N. Fraser, W. J. Fraser, Laurence Gavin, N. J. H. Gavin, H. M. Gillespie, A. G. Glass, M.A.; William Godfrey, J. M. Graham, W. W. Greer, John Grieve, P. A. Harry, Ephraim Henderson, M.A. (with distinction); A. W. Hogg, Jean S. Hogg, R. B. Hole, G. S. Husband, K. U. A. Inniss, Ada Jackson, William Jarvis, S. A. Johnston, J. H. H. Joubert, John Kirk, G. F. S. Landok, S. W. S. Leary, A. J. Lewis, James Lochhead, M.A. (with distinction); J. B. Lockerbie, A. D. M'Callum, John MacDonald, J. P. M'Gowan, M.A.; H. R. Macintyre, R. J. Mackessack, Amy M. Mackintosh, D. P. Marais, Aimée E. Mills, M.A., B.Sc.; L. S. Milne, T. B. Mouat, W. M. Mumby, D. S. Murray, Claude O'Flaherty, Archibald Oliver, C. D. O'Neal, E. G. S. Orbell, Garfield Ormrod, Florence M. S. Price, H. S. Reid, Margaret H. Robertson, Shiela M. Ross, C. S. Ryles, F. R. Sinton, L. H. Skene, C. J. Smith, G. M. C. Smith, W. A. Wilson Smith, R. A. L. van Someren, Patrick Steele, Hugh A. Stewart, A. C. Strain, K. A. Moody Stuart, Annie F. Theobalds, H. M. Thompson, Rose O. Townend, G. H. Usher, F. L. de Verteuil, R. W. L. Wallace, D. C. Welsh, D. P. D. Wilkie, F. A. Wille, W. B. Wishart, C. H. Wright, Margaret C. Young.

Third Professional Examination.—R. T. G. Aickin, Daniel Allison, J. A. Anderson, W. W. Anderson, F. L. Atkinson, Agnes Balfour, C. M. Begg, A. W. Beveridge, T. C. Blackwell, John Brennan, Edith C. Brown, J. E. M. Brown, G. L. Brunton, Angus Buchanan, Harry Caird, T. P. Caverhill, R. A. Chambers (with distinction), Katherine J. S. Clark, Elizabeth L. Colby, C. H. Craig, R. W. Craig, C. S. Crichton, D. M'K. Crooks, D. Halliday Croom, F. D. Crosthwaite, W. B. A. K. Cullen, Arthur Dangerfield, J. M. Darling, H. S. Davidson, James Davidson, W. H. Davison, D. E. Derry, A. C. Devereux, J. M. Dewar, James Donaldson, M.A.; A. M. Dryden (with distinction), Alice M. Ebden, G. J. Farie, John Findlay, H. N. Fletcher, John Fortune, C. R. Gibson (with distinction), F. H. Gibson,, J. D. Giles, James Girdwood, J. M. Glasse, Alexander Gray, M.A.; Elizabeth C. Gunn, A. Mabel Gurney, A. A. Hall, M.A.; C. R. F. Hartley (with distinction), G. W. Harty, George Henderson, A. E. Hodgson, A. F. Hughes, J. P. F. Inglis, J. M. Johnston, R. W. Johnstone, J. H. Jones, J. H. Kay, J. W. Keay, Ivan C. Keir, E. A. King, J. M. Kirkness, L. A. H. Lack, F. T. C. Linton, M.A.; C. D. Lochrane, Isabella Logie, J. M. Lovett, Alexander Lundie, Henry MacCormac, J. R. N'Gregor, N. D. Mackay, T. A. MacKenzie, Violet C. M'Laren, William MacLaren, J. J. M'Millen, J. B. M'Neill, I. M. Macrae, H. C. Martin, R. H. Martin, P. W. Mason,

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A. G. M. Middleton, A. S. Millard, G. H. S. Milln, W. S. Milne, C. E P. Mitchell, G. I. Moriarty, C. H. Muller, H. L. Munro, D. M'K. Newton (with distinction), Thomas Nicol, W. H. Nutt, D. D. Paton, M.A.; Thomas Peebles, J. A. Pottinger, Julius L. Pringle, W. L. Pritchard, William Readman, Eva A. Robertson, W. Sibbald Robertson, Amy Robinson, L. C. Robinson, J. A. Ross, Mabel Ross, J. A. Roux, N. C. Rutherford, D. G. Addison Scott, D. J. Scott, J. E. Scott, M.A.; W. M. Selby, G. H. Skinner, J. H. Smith, S. W. Smith, E. W. Smyth, Eva M. Snowball, Effie Stuart, John Tait, J. E. Taylor, T. T. Thomson, G. C. Trotter, E. A. Turpin, Robert Veitch, J. A. L. Wallace, W. R. S. Watkins, G. J. Wentzel, Leonard West, R. M. Manwaring White, C. H. Wright, B.A.; W. D. Wright (with distinction), G. W. Young.

Third Professional Examination (*New Regulations—Pathology only*).—Samuel Burns, M.A.

Punch is our authority for the statement that the following advertisement appeared in *The Lancet*: "WANTED, an Invalid Carriage (for horse or pony) to lie full length in."

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

SURGERY

SURGERY OF THE LIVER AND GALL-BLADDER

By JOHN SHAW M'LAREN, M.A., F.R.C.S.Ed.,
Assistant Surgeon, Royal Infirmary, Edinburgh

THERE is scarcely any department of surgery which at the present time has in itself more points of interest for the operator than that of the liver and bile-ducts. The operation of, say, choledochotomy can scarcely be called at any time a triflingly easy one, but, as in many other abdominal procedures, the operator may in one case have to face serious difficulties and dangers, which in another uncomplicated, straightforward one are entirely lacking. The degree to which adhesions are present is the dominating factor in this uncertainty; connected with it are questions of hæmorrhage, sepsis, and other factors, all of which demand earnest attention from the operator. Tumours of the liver, too, are coming more and more within the scope of the surgeon's consideration, and the widening range of abdominal surgery has brought operations on the liver into practice which hitherto have been confined to other organs. The increased interest has for some time stimulated a flow of papers on the surgery of the organ of greater or less value. Some of the more recent may be summarised.

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Position of the Patient in Bile-Duct Operations.—In the *Münchener Medicinische Wochenschrift*, No. 5, 1902, Rühl has an interesting paper under the high-sounding title, "Ueber steile Becken-Tieflagerung bei Operationen au den Gallengängen," which resolves itself into the simple suggestion that a more or less upright position of the trunk may be the best in gall-stone operations. Simple as this suggestion is, it may be none the less valuable. In some cases the operation is comparatively easy, but by no means in all; and he quotes a saying of Kehr, who has had a wide experience in choledochotomies, that the technique of the operation is often so difficult as to make it one of the most formidable which has yet been attempted in surgery. This is easily understood, when the relations of the operation area are considered, for the bile-ducts, the portal vein, the hepatic artery, and their branches lie close together, and at a great depth; the vena cava is near, and other important structures, such as the bowel, stomach and pancreas are not far off. Even a slight injury to one of these structures may result in an enormous increase in the difficulties of the operation, and such an accident may easily occur if adhesions have bound the structures together, tied down the bile-duct, or even made them unrecognisable, as happens in some cases. Two dangers then result: septic peritonitis, from wound of the stomach or bowel; and hæmorrhage from wounding even a small vessel, which may soon become dangerous on account of the inaccessibility of the parts, or the uncontrollable persistence which is so apt to characterise bleeding in a jaundiced patient. Rühl describes an operation on a woman who was suffering from a profuse flow of bile from a fistula, the result of a former operation, at which many stones had been removed. The woman was emaciated, and became jaundiced if at any time the flow of bile was arrested. A free incision was made, and the parts were found firmly matted together; the jejunum was wounded in separating it and was stitched. The foramen of Winslow was obliterated, and after it was freed a large stone was found in the common duct close to the duodenum. In the attempt to reach this a vessel was wounded, and in a moment the wound was flooded with blood. Gauze packing was soon soaked through, and on its removal the wound again filled instantaneously with blood. It occurred to the operator to raise the patient into a half-sitting posture, which a special arrangement of the operating-table he was using made an easy matter. The result was astonishing: although the hæmorrhage was severe, the bleeding point was easily recognised, as the blood now ran downwards and no longer overflowed the wound. A wound 4 mm. long was found in a large vein and forthwith sutured. The duct was

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now much more easily dissected out and the stone removed. Rühl states that this position of the patient—say raised to 45 degrees with the horizon—not only overcomes the difficulty of the wound being covered with blood in case of hæmorrhage, but also makes the whole field of operation far more accessible and visible (*viel übersichtlicher*).

Berndt, in No. 8, 1902, of the same journal, without expressing any opinion on Rühl's paper, states that he is induced by it to mention a procedure which he had tried for two years and found most helpful. It consists chiefly in placing a firm round pillow of about six inches in diameter under the patient's back at the junction of the dorsal and lumbar vertebræ. After a free incision has been made, if the pylorus and duodenum are pushed downwards and inwards, while the liver is pulled upwards, the common bile-duct is put on the stretch and comes to be almost on a level with the edges of the wound in the abdominal wall. "One is amazed at the ease with which everything can be examined and all manipulations carried out." In choledochotomy, and other operations on the bile-ducts, and especially for cholecystectomy, he has found this position and procedure admirable.

The Technique of Gall-Bladder and Duct Operations.—This is the title of a short paper on some other points than those mentioned by Mixter (*Annals of Surgery*, Jan. 1902). "The views advanced by the writer have been arrived at as the result of a very considerable number of operations in this region." He recommends an incision through the outer part of the rectus and parallel to it. The first thing is to separate adhesions, which are so commonly met in "old-standing" cases —in fact, in most cases not of very short duration—and to examine methodically the gall-bladder, ducts and pancreas. "The best method of examining the ducts by touch is to pass the forefinger of the left hand through the foramen of Winslow, the surgeon's back (?) being toward the patient. The duct, portal vein, and the artery are then easily felt between the finger and thumb." Two ligatures are better than forceps by which to hold the gall-bladder if it is to be opened. A full bladder is best emptied by an aspirating needle or trocar, through which, if the contents are septic, it may easily be washed out before being opened. Mixter, like most, believes in draining the bladder after it has been opened and emptied, and disapproves of suturing the incision. "I have in the past sewed up many gall-bladders without, I am glad to say, any bad results; but after having seen autopsies where it has been done by good surgeons, I shall do it no more." He disapproves strongly of

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the usual practice of stitching the gall-bladder to the abdominal wound, which risks leakage into the peritoneal cavity. He uses a short silk ligature to tie in a glass tube with "a flaring end" into the bladder; the ragged edges of the bladder are trimmed, and the bile is led by a rubber tube attached to the glass one through an ordinary gauze packing. This method also prevents subsequent dragging pain. For cholecystectomy no cautery-knife or special instrument is required. "The peritoneum being divided at its reflection from liver to gall-bladder, the latter is easily torn out of its bed by the fingers or blunt dissector till the cystic duct is reached, which can be tied and cut, and the operation is done. Sometimes there is quite a space between the cystic duct and artery, and they may have to be tied separately, though not often. I have never seen a hæmorrhage from the torn liver substance that a packing of gauze would not stop in a few minutes."

"Operations for the removal of stones in the common duct are among the most difficult and dangerous of surgical procedures." According to its position, a stone may be removed through the enlarged cystic duct, or through the incised duodenum, as well as through the incised common duct. Crushing *in situ* he regards as "a most unsatisfactory method." As regards the question of suturing the incisions in the duct, he finds that cases in which no sutures are used do as well as, if not better than, those in which the openings are stitched. This view is shared by Hinder (*Australasian Medical Gazette*, Jan. 20, 1902), Mayo apparently, and others, and seems likely soon to meet with universal approval.

The question of hæmorrhage in jaundiced patients is referred to. Mixter says that he has had no opportunity of trying the administration of gelatine before and after operation which has been suggested. He proposes that finely-divided gelatine, sterilized, and perhaps mixed with a little adrenalin, might be used on the cut and torn surfaces. Deaver, in a paper on "Obstructive Jaundice" in the *Annals of Surgery*, July 1901, speaks of the cases which he has lost from hæmorrhage. He says that "neither consecutive nor secondary hæmorrhage should occur, and particularly consecutive hæmorrhage. The latter is due, pure and simple, to the blood changes consequent upon the prolonged jaundice." The exact change in the blood has not been definitely determined, but probably a chemical alteration inhibits the fibrin-forming element, and prevents rapid coagulation; "the ordinary blood-counts indicating anæmia, hæmoglobinuria, leucocytosis, etc., do not account for the tendency to hæmorrhage in obstructive jaundice." Deaver has not been able to attribute much good to the use of chloride of

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calcium (30 grain doses for three or four days before and after the operation) as recommended by Mayo Robson, but admits his experience of it is limited. In this fact that cholæmia is such an important factor in producing dangerous and often fatal hæmorrhage, one finds another argument in addition to many in favour of operation during the earlier stages of the disease of cholelithiasis.

Excision of Liver Tumours.—In the *Australasian Medical Gazette*, Jan. 20, 1902, M'Kay records a successful case of partial hepatectomy, and discusses the various methods of operation for removal of liver tumours. The patient was a woman aged thirty-six, who had a swelling in the left epigastric region, and suffered great pain. Local peritonitis, with adhesions, was found at the operation; after the adhesions had been separated, the tumour was found to be about the size of two fists and attached to the left lobe without a pedicle. Silk ligatures were passed through the liver well beyond the growth, but on being tightened they cut through the liver so easily as to prove themselves useless to control hæmorrhage. Hat-pins were accordingly passed through the organ, and by means of them and the ligatures, which were fixed to the abdominal wall, the tumour was anchored outside the abdomen. It was then dusted with tannic and boracic acid and covered with gauze. The patient suffered great pain, but exhibited no other alarming symptom. Three days after the operation half the tumour was removed with an amputating knife, which caused the patient no pain whatever; considerable oozing was checked with the cautery. Each day a slice was removed, and in four days the pins were nearly reached. Recovery was completed in six weeks. The growth was a sarcoma. Four years later, it was deemed to have recurred, as the liver was greatly enlarged and the patient much wasted.

A case of Schrader's is mentioned, in which the patient was well seven years after the removal of a malignant tumour of the liver. Some 55 cases of partial hepatectomy have been recorded, the procedures falling under one of the four following divisions:—(1) Fixing the tumour outside the abdomen and gradually removing it; (2) removing the tumour at the operation, controlling hæmorrhage by a temporary elastic ligature, and then fixing the stump to the wound; (3) removing the growth by slow excision by the cautery, or by enucleation, or by excising a wedge, the hæmorrhage being controlled by ligatures and packing; (4) the "ideal operation" in which the tumour has been removed, hæmorrhage completely controlled and the abdominal wound closed, as in cases in which the growth

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was pedunculated and the tissue fairly fibrous. M'Kay describes a method of interlacing ligatures which he thinks would be effective. Carl Beck removed an enormous adeno-angioma from the liver of a young man. Half this tumour was removed at once and the rest sloughed off—probably two-thirds of the liver were removed; the remaining portion was enlarging, "so that it may yet give good hepatic function."

Acute Cholecystitis.—There is some interesting writing in various papers on this subject. Donoghue (*American Journal of the Med. Sciences*, Feb. 1902) records a case which ended in gangrene of the gall-bladder. The case he remarks is interesting as showing the rapidity with which a case of quiescent cholelithiasis may be converted into an acute fulminating condition requiring the prompt operative treatment which septic peritonitis demands, and it also supports the statement that "cholelithiasis is a disease which becomes dangerous through cholecystitis and its consequences." A woman, aged fifty, was suddenly seized with pain in the region of the gall-bladder, which lasted twelve hours, and was accompanied by vomiting. After a day of comparative relief, the pains recurred. On the fourth day her temperature was 103·5, pulse 130, and there was no jaundice. A swelling was found under the right rectus extending three inches below the ribs, dull on percussion and tender, and moving slightly with respiration. She had suffered from pain in the upper part of the abdomen for years, but never from jaundice. At the operation the gall-bladder was found tensely distended; at the outer end there was a gangrenous spot. No obstruction could be felt in the ducts except in the cystic duct. The bladder and cystic duct were removed and two gauze drains brought out of the wound. It was healed in twenty-three days, and the patient was well six months later. The bladder on examination was found to be twice the normal size with hæmorrhagic, dark red walls. The mucous membrane was ulcerated at various spots, and the summit of the bladder was gangrenous. A small calculus blocked the cystic duct. Donoghue remarks, what is obvious, that cholecystectomy is the operation to be performed when there is any approach to gangrene, and that the absence of the gall-bladder will prevent the occurrence of many possible further troubles. He points to the absence of jaundice, of clay-coloured stools, and of stones in the fæces in this case, and quotes an interesting passage from Behr, who in analysing 535 laparotomies for gall-stones, says: "icterus is wanting almost always in an inflammatory process of the gall-bladder and in the beginning of gall-stone disease. The passage of the stone in the fæces is not so common as it has hitherto

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been considered, for most colics are unsuccessful; that is, the stone remains in the gall-bladder. Finally, it is time that the physician should give up the view that icterus belongs to cholelithiasis, as in 80 per cent. of all gall-stones cases it is absent."

Hinder (*loc. cit.*) records several cases of a like kind, though not of such a dramatic intensity and rapidity of progress. In some jaundice was absent or remarkably slight, and stones were conspicuously absent. He considers that the pain of biliary colic is not due to the attempt of the duct to expel a calculus, but finds its explanation—probably each time—in an attack of cholecystitis. "Attacks of renal colic are not uncommon in cases where the stone does not engage the ureter," and certainly they often occur in cases in which the operator can find no stone in the kidney. Cholangitis will block the outflow of bile, and the slight increase of pressure on the inflamed bladder walls may produce a spasm in the bladder, more especially if its mucous surface is ulcerated. Deaver (*loc. cit.*) in his paper on obstructive jaundice, says that it may occur "when the gall-stones are confined to the cystic duct or gall-bladder. Here the obstruction to the flow of bile is due to the associated cholangitis," so that obstructive jaundice too may take place without blockage by a stone.

Cholecystitis (and Gall-Stone Obstructions, etc.) compared to Appendicitis.—Anyone reading the papers I have mentioned (and I suppose other recent literature on the subject) must be struck with the frequent comparison of cholecystitis and its conditions to appendicitis. "Indications for operation are not within the scope of this paper, but I cannot refrain from the remark, in passing, that operations on the gall-bladder are too seldom performed, or performed too late for the best good (*sic!*) of the patient. The general practitioner is, however, learning that attacks of pain, and other symptoms pointing to trouble about the gall-bladder, call for the surgeon as much as do symptoms pointing to the appendix." And again, "drainage of the gall-bladder under these circumstances is like drainage after the removal of an acutely inflamed appendix" (Mixter, *loc. cit.*). "The class of cases in mind (he is referring to those requiring immediate operation) is the fulminating type of the disease; they run a course similar in onset, duration and termination of the attack to the fulminating form of acute appendicitis" (Deaver, *loc. cit.*). "Biliary colic is almost always due to cholangitis. . . . If the gall-bladder be affected, the lining membrane or the whole bladder should be removed, just as we should remove an appendix, for the pathological conditions are

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very similar" (Hinder, *loc. cit.*). It may be said, of course, that it is "natural" for the surgical side of the profession to urge operation, but the more one reads on the subject, the deeper becomes the impression that early operation is advisable in "cases of gall-stones" as they are called. Like appendicitis, cholecystitis and cholangitis are apt to recur and recur, and produce disability and suffering; like appendicitis, the longer they are allowed to continue, the more difficult and dangerous will adhesion make the eventually necessary operation; and like appendicitis, cholecystitis may at any time pass into an acute, septic, "fulminating" condition, which threatens immediately the life of the patient. It certainly seems as if here again the physician will soon recognise that the diagnosis of the condition will form his chief duty, and that the surgeon will become the main agent in treatment. All the old appendicitis questions arise for answer. "When should the operation be performed?" "After how many attacks?" "Is one attack sufficient to demand operation?" And this too—"Is there a MacBurney's spot?" No, but there is a Mayo Robson's spot (see *Brit. Med. Journ.*, Jan. 18, 1902), and we may as well gratify that surgeon at once by naming it after him. It is quite probable that cholecystectomy will become a more frequent operation, to which the analogy to appendicitis may help; and in this connection a recent paper by M'Lean in the *Medical Age* will be read with interest. He reports a case of cholecystectomy in which he was able, by collecting the bile from the fistula, to make experiments as to the biliary flow. He found that the greatest quantity of bile was secreted during "the quiescent period" in the night (1 A.M. to 6 A.M.), though the secretion goes on continually, and that the gall-bladder stored only one-fifth or one-sixth of the amount offered it. He concludes from his experiments, and with apparent justification, that the entire amount secreted is not necessary to perfect health, and that the gall-bladder is "not a necessary appendage" and "can safely be removed."

DISEASES OF CHILDREN

INFANTILISM

By JOHN THOMSON, M.D., F.R.C.P.Ed.,
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THE word "Infantilism" is often met with in present-day medical literature, yet its general recognition as a scientific term is of such recent date that its exact meaning is not always

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clearly understood. References to it are common, but descriptions of the condition are hard to find because it has not yet had time to win its way into the text-books and cyclopædias to which we usually turn for systematic information on such matters. A few facts, taken from a valuable paper by M. Henry Meige, who is one of the chief authorities on the subject (*Gaz. des Hôp.*, 22nd February 1902, p. 207), may therefore be of some interest; and, although the victims of this morbid condition are not children in years, the nature of their symptoms will, it is hoped, form sufficient excuse for their being dealt with under the heading "Diseases of Children."

Definition.—Infantilism, according to M. Meige, is a form of defective development characterised by the persistence of the physical characters of childhood in one who has reached or passed the age of puberty. The arrest of bodily development is generally accompanied by a corresponding degree of mental backwardness, so that the individual seems a child in mind as well as in body. The bodily defect has been described as consisting in an arrest of development of the primary sexual characteristics (*i.e.* those relating to the genital organs), along with an absence of the secondary sexual characteristics (*i.e.* adult proportions of the figure, laryngeal enlargement, facial, pubic, and axillary hair, etc.), while the mental condition is one of persistent childishness.

Hertoghe (of Antwerp), who deservedly ranks as an authority on all matters relating to the thyroid gland, and who has especially studied its action on growth, is strongly of opinion that infantilism depends altogether on defective thyroid action. Other workers, such as Hofmeister, Gley, Broca and Brissaud, have to a large extent corroborated his views on the effect of the thyroid on growth; they have not, however, apparently arrived at quite such definite conclusions as to the invariable dependence of infantilism on athyria. It seems, indeed, probable that defective thyroid action, although doubtless the most important, is not the only cause of infantilism.

Different cases of infantilism present many individual differences, and further study of the subject may very likely make it possible to differentiate many distinct varieties of the condition. In the meantime, Brissaud, Allard and Meige have done good service in distinguishing clearly two types: (A) Myxœdematous Infantilism and (B) Lorain's Type of the Condition.

Description.—(A) *Myxœdematous Infantilism.*—Typical examples of this type show, in a slight degree, various of the peculiarities which, in a more marked form, are characteristic of myxœdema. They have round faces, slightly puffy eyes, thick

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lips, chubby cheeks, and more or less snub noses; but the skin is soft and delicate, the hair fine, and the eye-brows and eyelashes rather scanty. The abdomen is somewhat large, the limbs are plump but tapering towards their extremities, and all the bony and muscular prominences of the body are masked by a thick layer of fat. The genital organs are rudimentary; the penis is small, and the testicles, although well formed and completely descended, are those of a little boy. There is neither pubic nor axillary hair. The voice is harsh and cracked, the larynx very little prominent, and the thyroid gland generally of small size. The head is rather large for the size of the body, just as we see it in children; and, although the stature is not invariably small, the whole conformation of the figure is childish.

The bodily malformation is always accompanied by a corresponding mental childishness, and the patient is heedless and simple-minded, easily made to laugh or cry, quick tempered but readily appeased, prone to excessive fondness and to unreasoning dislikes.

Marfan and Guinon have drawn attention to the very interesting fact that, if the arrest of growth occur pretty early, the second dentition is either delayed or absent. Hertoghe has also pointed out that, in these cases, the epiphyses remain ununited and that, consequently, there is a possibility of a later growth in stature. The same writer has enumerated a large number of accessory symptoms which are sometimes met with, and all of which he regards as evidence of defective thyroid action. These are prurigo, pruritus, psoriasis, adenoids, varicocele, umbilical hernia, constipation, nocturnal enuresis, an abnormal gait, heavy deep sleep, subnormal temperature, habitual cold feet, chilblains, and palpitation. A number of diseases of the nervous system have also been described as occurring in some cases.

When infantilism occurs in females, its effect on the figure and on development is similar to that met with in the male sex. The infantile woman remains a big girl, and puberty does not bring about the usual changes. Menstruation is in abeyance, the breasts do not enlarge, the neck shows no thyroid prominence and no hair appears on the axillæ or pubes. As the hips enlarge very little, the trunk remains of a cylindrical shape and the patient has no waist to speak of.

(B) *Lorain's Type of Infantilism.*—In this variety, the figure is so small that, at first sight, it looks like that of a child. When the patient is stripped, however, his outlines are seen to be those of an adult and not those of childhood. The head is proportionately small and the trunk well-formed; for the shoulders are broad compared to the hips, and the bony prominences and the muscles stand out distinctly. We have before us a miniature

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man (or woman, as the case may be), and not one who has retained the characteristics of childhood beyond the proper time. There is indeed no growth of facial, pubic or axillary hair, yet the genital organs, although small, are well-shaped and quite large enough for the size of the body. The intelligence in both sexes is generally normal. In pure instances of this type, the epiphyses are united to a normal extent.

Etiology and Pathology—(A) *Myxœdematous Infantilism.*—The credit of having established the essential importance of thyroid insufficiency in the etiology of this type belongs largely to Brissaud and Hertoghe. *Defective action of the thyroid* is invariable. It may be only partial, or it may be complete; but, to some degree, it is always there.

Now, insufficiency of the thyroid gland is found under various circumstances, and in various degrees. It may, for example, be *congenital* and complete from the very first, in which case we have ultimately the well-known picture of typical cretinism. The patients are "nurslings who, according to the law, have attained their majority, but who are still in swaddling clothes where military conscription is ready to enroll them as citizens."

The lesion, however, although congenital, may be slight at first and only gradually increase. In such cases the defective development dates only from the time when the gland has begun to be functionally inadequate.

In other instances, the thyroid deficiency is *acquired* and may begin during later childhood. In this case the patient remains a perpetual adolescent. Infantilism may, indeed, be said to represent the incomplete form of myxœdema (*myxœdème fruste*) as it occurs in childhood. Lastly, the damage to the function of the thyroid may be caused by some acute disease (*e.g.* measles) or by a chronic illness, or even by general malnutrition. In these circumstances, however, it only occurs when the system is very severely affected.

The question as to how the thyroid deficiency produces this effect is a difficult one, and various explanations have been given. It is, however, commonly supposed that a thyroid lesion sets up a *specific auto-intoxication.* Probably the thyroid has, when in health, the property of rendering innocuous such toxines in the blood as are capable of exerting a hurtful influence on the trophic centres and also on those connected with psychical processes.

While the arrest of development affects all the organs and all the tissues, its effect on the skeleton is especially interesting. This, as we have already seen, consists in a *delayed union of the epiphyses and diaphyses* of the long bones. This can be demon-

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strated by radiography as Hertoghe has shown, and it constitutes a diagnostic point of great value. The arrest of growth in myxœdematous infantilism is therefore due to *an arrest of ossification.*

Along with dystrophy of the bones, we find dystrophy of the genital organs also. It is interesting to remember that this is not the only condition in which there seems to be some connection between the growth of these two systems. For example, experimental castration has sometimes been followed by overgrowth, especially of the lower limbs; and Sacchi, Silva, and more recently, Paul Dalché, have observed regular giantism, as well as infantilism following various lesions of the testicles. One of Dalché's patients who had had syphilitic orchitis presented both the appearance and the mental condition of myxœdema, although his thyroid was normal; and his symptoms disappeared under the administration of orchitine. Quite recently the same writer has reported two patients with pseudo-myxœdema, which was due to ovarian dystrophy, and was cured by ovarian substance. In the light of these facts, it might be suggested that in some cases at least of infantilism, the state of the testicles might be the primary fact, as the thyroid is in others.

(B) *Lorain's Type of Infantilism.*—The individual who presents this type is really suffering from a disease, which, apart from any thyroid influence, leads to a state of mal-nutrition of his tissues. Before considering what this disease consists in, we may say that it may be caused by a variety of morbid influences. Of these the most potent are tuberculosis, congenital syphilis and alcoholism, and they are more potent when they act in combination, or when the individual affected is at the same time the subject of malnutrition, and unfavourably situated as to work and food. Malarial cachexia is also sometimes a causal factor. Poisoning by morphine, tobacco, lead, mercury and sulphide of carbon, and consanguinity of the parents may also be mentioned as possible causes. Finally, congenital disease of the heart, patency of the ductus arteriosus, and mitral stenosis are also regarded as causes of this type of infantilism, because they are held as favouring the morbid process which is its immediate cause.

This morbid process consists in *defective arterial development* (anangioplasia); and the above-mentioned causes act by producing it. A certain degree of nutrition of the tissues is allowed by this narrow state of the arteries, but not sufficient; the body, therefore, being imperfectly nourished, remains small, puny and dwarfed. Development goes on, but growth is defective. The epiphyses are found to be normally united. The stunted growth

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is due, therefore, not to defective ossification, as in myxœdematous infantilism, but, on the contrary, to its premature occurrence.

Further, according to M. Meige, we meet not uncommonly with transition cases and mixed cases of infantilism, in which the patients present some of the characters of both types.

At the February meeting of the Edinburgh Medico-Chirurgical Society (see the March number of this Journal), Dr Byrom Bramwell showed a most marked case of infantilism, apparently of an indefinite type. In this patient the symptoms had followed extremely protracted diarrhœa, and there was the strongest reason to believe that the function of the pancreas was in abeyance. Dr Bramwell suggested that the infantilism was due to the defective state of the pancreas. From the facts of this case, and those of another precisely similar one, known to other members of the Society, it seems probable that Dr Bramwell may be able to prove that the pancreas is at least as important in its influence on bodily growth as are the testicles and ovaries, although scarcely quite comparable to the thyroid itself in this particular.

PATHOLOGY

TUBERCULOSIS

By THEODORE SHENNAN, M.D., F.R.C.S.Ed.,
Pathologist, Royal Infirmary

IN *La Revue Medicale de la Suisse Romande*, 20th January 1902, Professor Zahn considers the cases of Tuberculosis examined at the Pathological Institute of Geneva during 25 years, with reference chiefly to primary and secondary affection of the intestine, and the frequency of the occurrence of waxy degeneration in the organs.

Between 1st October 1876 and 30th September 1901, 6320 *post-mortems* were performed, of which 3743, or approximately 59 per cent., were on males, and 2577, or approximately 40 per cent., on females.

In 2058, or 32·5 per cent. of these cases, tuberculosis existed —all doubtful cases being verified by microscopic examination. Of these 1357 were males and 701 females. If the calculations were made on the total number of *post-mortems*, 36·5 per cent. of males and 27·2 per cent. of females were tuberculous.

The disease was active (*tub. floride*) in 1893 cases, or 91·9

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per cent., and latent in 165, or 8 per cent. From his statistics he concludes that females are less subject to tuberculosis than males, the relative frequency being as 1 to 2.

Primary Focus.—The primary focus was not made out in all the cases, but where it was found, the following results were obtained :—

In 1528 cases, or 80·7 per cent., the lungs were more or less extensively affected.

In 71, or 3·2 per cent., the bones or joints were tuberculous, no older condition of the lung being observed.

The genito-urinary organs were affected primarily in 42 cases, or 2·2 per cent.

21 cases (1·1 per cent.) of primary tuberculosis of the supra-renal capsules were noted.

In 7 cases (0·3 per cent.) the primary lesions were found in the brain.

Primary intestinal tuberculosis, due to direct infection of the mucous membrane, was found 43 times, or in 2·27 per cent. of the cases. He admits, however, that from the *post-mortem* material at his disposal he cannot judge of the real frequency of primary intestinal tuberculosis, seeing that few of the *sectios* were on children.

In the cases enumerated, all those of intestinal tuberculosis where distinctly older lesions, or healing foci existed in the lungs, were considered secondary.

In 19 of the cases of primary intestinal tuberculosis, generalised miliary tuberculosis resulted.

Mode of Infection.—In the primary intestinal cases he found it difficult to determine the mode of infection, but inclines to attribute most if not all to the ingestion of insufficiently-cooked milk from tuberculous cows, and considers that the theory of infection by swallowing of bacilli floating in the air cannot easily be proved.

Secondary Tuberculosis of the Intestine.—Out of the cases of pulmonary tuberculosis, he found that 996, or 63·2 per cent., showed secondary intestinal lesions, and explains these by the swallowing of infective sputa from the lungs. In the remaining cases, in which no intestinal tuberculosis existed, the stomach, almost without exception, presented a normal aspect, thus proving that, as a general rule, some anatomical change in that organ is necessary before virulent tubercle bacilli can pass it. In women such anatomical alterations are less frequent than in men, although functional troubles are more frequent. Zahn found that of the cases presenting secondary intestinal tuberculosis, 64·9 per cent. were male and 35 per cent. were female.

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Tuberculosis and Cancer.—These diseases developed simultaneously in 76 cases: 45 male and 31 female.

In 41 cases: 28 male and 13 female, the tuberculosis was active; in 35, 17 male and 18 female, it was latent.

Tuberculosis and Sarcoma. — These conditions occurred together in 6 cases: 3 male and 3 female.

Waxy Disease in Tuberculosis.—This degeneration was found in only 98 of the cases of tuberculosis: in 79 following pulmonary tuberculosis, and in 19 following tuberculosis of bone.

In the *Montreal Medical Journal*, Dec. 1901, Dr Blackader discusses the relationship between human and bovine tuberculosis, with special reference to primary ingestion tuberculosis in children.

The paper is to a great extent a marshalling of facts which tend to controvert Koch's statement at the recent congress in London, that infection of man by bovine bacilli is of extremely rare occurrence.

Most of the facts and recent work in this direction have already been referred to in recent numbers of this *Journal* (September and October 1901), but he emphasises some points, and presents new aspects of the question which merit notice. The paper also makes it abundantly clear that statistics based firstly on the frequency of ingestion tuberculosis in a country such as Germany, where milk is usually boiled, or in countries such as Canada or the United States, where tuberculosis of cattle occurs but seldom, must not be held as applicable to this country or England, where tuberculosis among cattle is comparatively common, and milk is preferred raw by the great majority of the inhabitants.

We may arrange his facts in relation to some of the different aspects of the question.

Firstly as to Koch's inference that the bacilli of human and bovine tuberculosis belong to different species. It is generally held that these, with the bacillus of avian tubercle, are rather mere variations in character of one original form of bacillus, the variation being produced and rendered more and more pronounced by passage through a series of animals of the same class, human, bovine or avian.

He emphasises this fact by reference to the general deduction which may be considered proved, viz., that passage of pathogenetic germs through a series of animals of one species leads to the germs acquiring a maximum virulence for that species, and at the same time in many instances a marked diminution in virulence for certain other species.

As an excellent example of this, he points afresh to what has been ascertained with regard to the contagion of small-pox and cow-pox. "For many years it was held that cow-pox

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and small-pox were two absolutely distinct diseases, an opinion due in great measure to the extreme difficulty experienced in inoculating cattle with the virus of human small-pox. We now know that they are the same, for it has been shown that if we take matter from a small-pox vesicle and inoculate it with care into calves, we obtain, not a typical vesicular eruption, but a few hard papules only. If these are broken up, however, and inoculated into a second calf, in that calf the result is more typical, and, by repeating the process, after three or four passages we obtain the development of a perfect vaccine vesicle. Lymph taken from this vesicle produces typical vaccinia, or small-pox with localised symptoms as opposed to the small-pox with generalised symptoms which the original virus would have produced."

Considering these facts, Blackader draws the conclusion that Koch's statement that human tuberculosis differs from bovine and cannot be transmitted to cattle is to be regarded as true only in a modified sense. There is much difficulty in inoculating the cow with small-pox, but there is little difficulty in inoculating man with cow-pox. "Is it not possible that a similar condition may exist in regard to the bovine tubercle bacillus?"

He next discusses the methods of infection in man, and refers to the now recognised fact, that even in children the respiratory tract is much more important than the alimentary as a channel for infection. He, however, reasserts as others have done that we may question whether the cases in which the mesenteric glands are alone or chiefly affected, represent truthfully all the possibilities of infection through the intestinal tract and by food.

"Does not Koch himself give us another suggestion, perhaps somewhat unwittingly, when, describing the *post-mortem* findings in animals which had eaten the bacilli of bovine tuberculosis, he says, 'These animals had without exception severe tubercular disease, especially tuberculous infiltration of the greatly enlarged glands of the neck and of the mesenteric glands, and also extensive tuberculosis of the lungs and spleen.'"

"Leonard Pearson has also recently shown by many feeding experiments, under the auspices of the Pennsylvania State Live Stock Sanitary Board, that animals fed with tuberculous material may develop pulmonary tuberculosis, and in some instances fail to show lesions in any other organ."

Again, he draws attention to the fact that tubercle bacilli gaining access to the body through the intestines may be readily conveyed from the lacteals through the thoracic

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duct into the right side of the heart, and thence directly to the lungs, thus giving credibility to the assertion occasionally made that in many cases of apparently primary pulmonary tuberculosis the bacilli have been carried to the lungs in the blood stream and tend to be arrested there chiefly at the apices.

Koch's statement, as quoted, also gives support to the possibility of infection through the tonsils, the bacilli travelling downwards along the cervical glands to the mediastinum. That infection takes place in this manner in man seems undoubted, as has been noted in children by Sims Woodhead, and also by the reviewer. Sidney Martin's feeding experiments on the pig are well known, in which he found that in these animals tubercle bacilli very commonly gained admission by way of the tonsils.

As to the question whether there might be two types of the disease in children, one of human origin and the other of bovine, Blackader quotes the views of Adami, who states that two types of tuberculosis are met with—particularly in the young—the rapidly and the slowly progressive forms. Concerning the former, Adami states that it "corresponds to the fatal tuberculosis of early adult life, save in this, that it appears apt to be still more rapid, to generalise simply, and to end in acute miliary tuberculosis, or tubercular meningitis; its very rapidity indicating that the young are even more susceptible to virulent tuberculosis than are adults. It is to the slowly progressive form, however, that I would especially draw your attention—the form which shows itself as scrofulous lymphatic glands and tubercular peritonitis—a peritonitis often so mild that it can be cured by inunctions of mercurial ointment and other drugs setting up a mild irritative process."

This may be partly due to an increased tissue resistance, as Blackader and Adami state, a factor which is not sufficiently emphasised in treating of varying degrees of virulence of tuberculosis, but is there not another possibility supported by facts already brought forward as to the increasing virulence of organisms towards certain species after successive passages through individuals of that species, which is often accompanied by a lessened virulence towards animals of another species. This possibility is that virulent tuberculosis in man may be the result of infection by bacilli from previous cases in man, in passage through whom their virulence has gradually been exalted, whereas the comparatively mild and slowly developing tuberculosis which, be it noted, affects chiefly glands and serous surfaces, occasionally even taking the characters of perlsucht, may be the result of infection by bovine tuberculosis,

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which it must be remembered is characterised by just such a distribution and morbid anatomy. This possibility has already been referred to in a former digest.[1]

New Books and New Editions

Diseases of the Stomach and their Surgical Treatment. By A. W. Mayo Robson, F.R.C.S., Senior Surgeon to the General Hospital at Leeds, etc., etc., and B. G. A. Moynihan, M.S. Lond., F.R.C.S., Assistant-Surgeon, Leeds General Infirmary, etc., etc. Pp. 308. London: Baillière, Tindall & Cox, 8 Henrietta Street, Strand. 1901. Price 15s.

This work possesses in an unusual degree the attraction, so conspicuously absent from many surgical books of the day, of being an expression of the opinion of men who have had a wide practical experience of the subject which they are treating. In spite of a certain tendency to overlapping and diffuseness, it consequently will be found of great practical value to the operating surgeon.

The book is well printed, and the illustrations, particularly the photographs of specimens, are very good. The opinions of other workers are widely drawn upon, and in most respects the authors have succeeded in producing a thoroughly reliable and up-to-date account of the gastric surgery of to-day. The first chapter is devoted partly to a consideration of the surgical anatomy of the stomach, and Professor Birmingham's views, obtained from sections of bodies hardened in formalin, are given.

In palpating the stomach and abdomen, useful advice is given with regard to the propriety of sliding the hand from one part of the abdomen to the other in preference to digging in the fingers successively at different parts of the abdomen, a procedure calculated to set up defensive contractions of the abdominal muscles. In the diagnosis of rupture of the stomach, the possible fallacy of loss of liver dulness from distended colon is duly noted.

Reference is made to Dr Ogston's method of diagnosis of stricture of the œsophagus by noting the longer time (14 or 15 seconds instead of 4) which is taken for food to reach the stomach in the presence of stricture, the fluid being heard to rush into the stomach with an amphoric rushing sound, when

[1] "Tuberculosis in Man and the Lower Animals," *Scot. Med. & Surg. Journ.*, Oct. 1901.

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the ear is placed three inches below the angle of the left scapula.

X-rays have been found of use in localising foreign bodies in the stomach, but the *gastro-endoscope* has not proved itself of any material service.

In performing gastrotomy for diagnostic or other purposes the authors approve of a vertical incision made a little to one side of the middle line through the fibres of the rectus. This incision is less liable to be followed by ventral hernia than one made exactly in the middle line, while it is better than the oblique incision along the costal margin, as this latter entails the division of too many muscular fibres.

Von Hacker's posterior gastro-enterostomy is the form of that operation which the authors advise. They record forty cases for non-malignant disease, with only two deaths; the mortality, however, in malignant cases, is found to be much higher, namely, twenty-three operations with ten deaths.

In speaking of cancer of the stomach they lay special stress upon three points:—

(1) The disease spreads quickly and widely in the submucosa. This indicates the necessity for cutting wide of the disease.

(2) Malignant disease tends to spread towards the lesser curvature in the direction of the lymph stream.

(3) The duodenum is habitually free from infection, even in cases of cancer of the pyloric orifice.

There is a general inclination to malignant disease in the stomach being strictly local, and the authors accordingly encourage attempts at removal of cancerous growths in properly selected cases, and are of opinion that, on the whole, such operations are fairly successful as regards local recurrence.

The statement of Czerny, Rindfleisch, and Kraske, that palpable gastric tumours are inoperable is condemned, but their seriousness is admitted.

The authors state that "cancer of the stomach should be surgically dealt with before being clinically recognisable," an aphorism which most surgeons will approve.

In gastrectomy for mural cancer the authors recommend wide excision of the disease, and they quote Mayo's opinion to the effect that if the disease is spreading circularly in the line of the vessels there is little tendency to recurrence; but if transversely along the curvatures, the prognosis as to recurrence is much less favourable.

Pylorectomy is highly commended in properly selected cases, as it not only gives a chance of complete cure, but if the patient recovers from the operation he is in a much more

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comfortable condition than after gastro-enterostomy, and the prolongation of life is greater, even if eventual recurrence does happen.

Kocher's method of pylorectomy, as modified by Mayo Robson, is the operation recommended.

The condition of gastric ulcer and its numerous complications receives most exhaustive treatment. No less than twenty-three different complications of this disease are discussed in over one hundred pages of the book. Mr Mayo Robson's views on this subject are widely known, and it will not, consequently, be necessary to do more than allude shortly to this part of the work.

From clinical observation the authors think that ulcer occurs three times as often in women as in men. Women are more liable to the acute form of ulcer, and men to the chronic and more fatal form. The acute form occurs below the age of 30 in 70 per cent. of cases, while less than 7 per cent. of chronic ulcers occur before the age of 30. The acute round ulcer is most often followed by violent hæmorrhage and perforation. In the matter of prognosis the authors take rather an unfavourable view, and agree with those authorities who say that only some 50 per cent. are cured by medical treatment.

Mr Mayo Robson's somewhat dogmatic views as to the apparently easy recognition of the exact site of the ulcer by consideration of the pain caused by the passage of food over the ulcer, varying with the position in which the patient is lying, are well-known, and must attract attention as the observation of one who has had most exceptional opportunities of verifying the correctness of his opinion by inspection in the course of operation.

While we may not all agree with the authors in their opinion as to the necessity for surgical intervention in such a large number of cases of gastric ulcer as they consider require operation, nor take quite such a gloomy view as they appear to do as to the mortality from hæmorrhage from gastric ulcer, we can heartily congratulate them on their excellent operative results, and thank them for laying their views before the profession in such an interesting and instructive way.

Psychology, Normal and Morbid. By CHARLES A. MERCIER, M.B., M.R.C.P., F.R.C.S., Lecturer on Insanity at the Westminster Hospital Medical School, and at the London School of Medicine for Women. Demy 8vo, pp. xvi., 518. London: Swan, Sonnenschein & Co., Ltd. 1901. Price 15s.

Dr MERCIER is the author of several good works and essays, and it will be readily agreed that his "Psychology" is his *magnum opus* both as regards the bulk and the importance of its contents, for it embodies the well-

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matured and well-expressed thoughts, upon the workings of mind, of a man who as physician and alienist by profession, and philosopher and psychologist by bent, has made mind in its manifold aspects the special study of his life; and who as scientist, biologist, physiologist and man of affairs, takes a broad view of his subject and is no dullard follower of the Schools.

Dr Mercier does not plunge into the mystic secrets of metaphysics nor does he soar into the airy realms of transcendentalism, but taking Spencer and Mill as his masters, and the accepted facts of physics, physiology and biology as his data, he constructs an essentially empirical psychology whose main features are as follows.

Consciousness is a manifestation only of living organisms that possess a nervous system, and it is an accompaniment of the activity of the supreme portion only of the nervous system. The supreme nerve region executes the home and foreign policy of the individual, and indeed practically is *the* individual, for it presides over and regulates the internal and the external affairs of the body. Of the twofold activities of the supreme nerve region, those which regulate the internal economy of the body have for their accompaniment the consciousness of self (subject-consciousness); and those which regulate the commerce between the body and the world outside have for their accompaniment the consciousness of this external world and of its relations to the self (object-consciousness). With the birth of consciousness in the individual comes the recognition of the self in the midst of a world of not-self, and of the continual commerce between the two, and sooner or later also of the self as a spontaneous agent able to exert or to suppress its own activity. Between every living individual and the surrounding world there is constant action and reaction, a continual interchange of motion. Action of the universe upon the individual, or the reception of motion, has its mental correlative in Sensation. Reaction of the individual upon the universe, or the emission of motion, has its mental correlative in Will. And the intermediate stage, or the rearrangement of motion, between its ingress and its egress, has its mental correlative in Thought. Sensation, Thought and Will are the three prime factors in the constitution of mind. The mutual interaction between the individual and the world is experience; every experience leaves its mark on the organism, and has its mental correlative in Memory. In other words, the transference of motion through our bodies, which are not perfectly elastic, produces an alteration in the disposition of their parts, leaves a more or less permanent "set," mark, or change of structure, which is the physical basis of memory. Further, experience of the interaction between the individual and the world is either beneficial or harmful to the individual, and accordingly in this aspect it has other mental correlatives of an affective nature, favourable interaction being accompained by Pleasure, and unfavourable interaction being accompanied by Pain. Lastly, from the teleological aspect, every organism necessarily comes into the world with the primary object of continuing its species, and with the secondary object of continuing its own existence until the former is accomplished; and during its life many other more immediate objects or ends appear and are followed apparently for their own sake, but in reality all are resolvable, traceable, and subservient to the fundamental object of continuing the race; and therefore from the teleological aspect, experience of strife towards an end has its mental correlative in Desire, and experience of hindrance from an end has its mental correlative in Aversion.

Dr Mercier having thus mapped out his ground proceeds to work out its various sections, taking up in succession Sensation, Thought, Volition, Memory, Pleasure and Pain, and Subject-consciousness. A detailed review of these is impossible here. Sensation is dealt with very briefly and includes no reference to the algesic sense. The section on Thought occupies half the book, and contains much that is new and original. The

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author elaborates the theory that Thought is essentially the establishment of relations of likeness and unlikeness among mental states, and he differentiates the thinking process into six principal varieties—syncrisis (or comparison), axiomatic reasoning, analogy, proportional, immediate, and mediate inference. Like many other logicians, he ousts the syllogism from its time-honoured position as the sole form of reasoning, and he regards it merely as a subordinate mode of axiomatic reasoning. From the modes of thinking the author passes to the modes of belief or cohesion of thought, and discourses in an able manner on certainty and uniformity in experience, with its grades, likelihood, probability, expectation, truth and credibility. In the discussion on probability he contends with reason against the claims of the mathematicians to estimate belief in quantitative terms. His masterly analysis of belief into the five categories of the true, the fact, the credible (with its varieties of likelihood and doubt), the incredible and the inconceivable is most instructive and useful. The section on Volition is admirable, and the author skilfully dissolves the apparently incompatible mixture of determination and free-will. The treatment of Memory is excellent, and contains the keynote of the author's physiological psychology. The section on Pleasure and Pain is less convincing, but in it the author states his rational theory of emotion as a triad of thought, pleasure or pain, and consciousness of the accompanying bodily change.

Dr Mercier in his preface complains that existing works on Psychology do not give much help to the student of insanity. The spirit of the age seems to demand that all our studies be put to the test of their practical value. Even the classics are being ousted from their long-standing sway in the schemes of education, and no longer are accepted in the pure light of a study for their own sake, but are being weighed in the scale against the modern tongues and the sciences for their comparative value as a means of education. The practical value of the study of normal psychology is to enable us the better to understand erroneous and morbid mentalisation as exhibited in insanity, crime, vice, and peculiarities of character and conduct in individuals and in human societies and states. Most treatises on Psychology deal with morbid mental phenomena, and indeed specify them as a legitimate source of light in elucidating normal mental processes. Still their treatment of these topics is more or less incidental and superficial. In this respect Dr Mercier's Psychology fills a distinct gap. For while it is primarily a work on psychology, it is written specifically from the point of view of, and for the aid of, the student of alienism, and consequently the author systematically deals with the faults of sensation, thought, and so on, at the end of the respective sections on these subjects, explaining the erroneous and the morbid in the light of the preceding psychology of the normal processes. Dr Mercier does not pursue these morbid aspects of mind with the fulness and detail of recent French and English authors, but his treatment of them forms a sufficient introduction to the subject of "morbid psychology" for the student of alienism, and no psychiatrist should fail to read the book carefully. Dr Mercier is especially good on the morbid aspects of Belief, Attention, Instinct, and Determination; and his view of Delusion as the transfer of a concept from one category of belief to another apart from experience, is in harmony with the clinical facts, and is of practical use in prognosis.

Looking at Dr Mercier's Psychology as a whole, we admire his fresh, original and broad treatment of the subject. He supplies us not only with a good survey of the country of psychology, but also with peeps into the borderlands of logic, epistemology, ethics, æsthetics, jurisprudence and ethology; and every now and then with a different view of the "black country" of insanity. As a work for psychologists we think it somewhat unequal, not covering the ground in some places; attempting too much in

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others. Thus Dr Mercier gives but scanty treatment to sensation and apperception, and the modern experimental psychology of the laboratories he quite ignores. Again, notwithstanding the author's preference to regard forms of thought in the light of modes of thinking, we think that much of the bulky section on Thought (especially much of that relating to the syllogism) belongs more suitably to logic than to psychology, and could with advantage be relegated to an appendix, or, better still, should be dealt with in a separate work on logic. As a work for alienists, we commend it to all interested in psychiatry, and we cordially congratulate the author upon his "first essay in an untilled field." At the same time, as a work for alienists busily engaged in psychiatry, we think it would serve its purpose better if it were developed into a separate treatise on morbid psychology, with the author's views on normal psychology condensed and serving as a text for the problems of insanity and with added chapters on responsibility and its applications to insanity, crime and vice.

As an example of expository literature the work is all that it should be, well arranged, clearly thought and expressed, abounding in apt illustration, and withal enhanced by a certain freshness and impressiveness of style characteristic of other efforts of the writer's pen.

Mr Dooley's Opinions. London: W. HEINEMAN. Price 3s. 6d.

ON page 417 the readers of the Journal have the opportunity of reading Mr Dooley's Opinion on the Carnegie Gift. The book before us contains his opinions on a variety of subjects, such as Christian Science, The Yacht Race, Cross Examinations, etc. Some are better than others, but all are good; and the good-natured exposure of the weak points of society, written in quaint Hiberno-Chicago Americanese, will be enjoyed by most of those who read the book. We say by most—for American humour requires humour to appreciate it, and it may be that the less keen variety found south of the Tweed may not respond to Mr Dooley's wit. But that will not be the fault of the writer.

List of Books Received

From Longmans, Green & Co., London.

Malaria. By Angelo Celli. Translated by J. J. Eyre. Price 10s. 6d.

Anatomy, Descriptive and Surgical. By H. Gray. Price 32s.

Selected Essays and Addresses. By Sir James Paget. Edited by Stephen Paget. Price 12s. 6d.

From Baillière, Tindall & Cox, London.

Diseases of the Stomach. By Robson and Moynihan. 8vo. Price 15s.

The Morphia Habit. By Oscar Jennings. Second Edition. 8vo. Price 3s. 6d.

Menstruation and its Disorders. By Arthur E. Giles. 8vo. Price 2s. 6d.

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From H. K. Lewis, London.

Diseases of the Thyroid Gland. By G. R. Murray. 8vo. Price 7s. 6d.
Nursing and Hygiene. By R. L. Roberts. 8vo. Price 2s. 6d.
Elements of Medicine. By A. H. Carter. 8vo. Price 10s. 6d.
Smallpox and Vaccination in Europe. By E. J. Edwardes. 8vo. Price 2s. 6d.

From T. Fisher Unwin, London.

Alcoholism. By G. A. Reid. Price 6s.

From Rebman, Limited, London.

Venereal Diseases. By Sturgis and Cabot. Price 6s.
Water Supplies. By Thresh. Third Edition. Price 7s. 6d.
Diseases of the Intestines. By Hemmeter. Vol. i. Price 50s.
Freyberger's Pocket Formulary of Diseases of Children. Price 7s. 6d.
Diseases of the Digestive Organs in Infancy. By Louis Starr. Third Edition. Price 12s. 6d.

From W. B. Saunders & Co., London.

Saunders' Medical Hand Atlases. Ophthalmoscopy. By Haal.
Dose Book and Manual of Prescription Writing. By Thornton. Second Edition.
Modern Obstetrics. By W. A. N. Dorland. Second Edition.
Four Epochs of Woman's Life. By Anna Galbraith. Introductory by J. H. Musser, M.D. 12mo. Price 5s.
Nothnagel's Encyclopædia of Practical Medicine. "Saunders' English Edition" (Smallpox, &c.). Edited by Sir John Moore. 8vo. Price 21s.
Text-Book of Pathology. By Alfred Stengel. Third Edition.
Clinical Examination of the Urine. By Bergen Ogden.
Principles of Hygiene. By D. H. Bergey.

From J. & A. Churchill, London.

Elementary Ophthalmic Optics. By J. H. Parsons. Price 6s. 6d.
Short Practice of Midwifery. By Henry Jellett. Third Edition. Price 8s. 6d.
Introduction to Bacteriological Examination of Water. By W. H. Horrocks.
Practical Anatomy. By Professor Alfred W. Hughes. Edited by A. Keith. Part II. Price 8s. 6d.
Hare Lip and Cleft Palate. By R. W. Murray. Price 3s.
Synopsis of Surgery. By R. F. Tobin. Second Edition. Price 6s. 6d.
Excess of Salt in Diet, with Three Other Factors, the Probable Causes of Cancer. By James Braithwaite. Price 1s.

From Longhurst, Newcastle.

Manipulation and Massage. By J. A. Peters.

From Oliphant, Anderson & Ferrier, Edinburgh.

The Academic Gregories. By Agnes Grainger Stewart. Price 1s. 6d.

From Henry Kimpton, London.

Care and Feeding of Children. By L. E. Holt. Second Edition.
The Treatment of Neurasthenia. By A. Proust and Gilbert Ballet. Price 5s.

From Swan, Sonnenschein & Co., London.

A Text-Book of Insanity. By Charles Mercier. Price 6s.

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From Macmillan & Co., London.

Some Thoughts on the Principles of Local Treatment in Diseases of the Upper Air Passages. By Sir Felix Semon. Price 2s. 6d.

The Treatment of Injuries. By Wharton P. Hood. Price 4s. 6d.

Climates and Baths of Great Britain. A Report of the Medical-Chirurgical Society of London. Vol. ii. Price 12s. 6d.

From the New Era Printing Co., Lancaster, Pa.

Outlines of Anatomy. By Edmund W. Holmes.

From William Green & Sons, Edinburgh.

Manual of Antenatal Pathology. By J. W. Ballantyne.

From J. Wright & Co., Bristol.

The Medical Annual. Price 7s. 6d.

Introduction to Dermatology. By Norman Walker. Second Edition. Price 9s. 6d.

From Cornish Brothers, Birmingham.

Contributions to Practical Medicine. By Sir James Sawyer. Third Edition.

From C. Naud, Paris.

Les Fonctions Hépatiques. By A. Gilbert and P. Carnot. One vol. Five francs.

Publications of Cornell University Medical College.

Studies from Pathology. Vol. i.

From J. Hedderwick & Sons, "The Citizen Press," Glasgow.

Supplement to the Forty-third Annual Report of the General Board of Commissioners in Lunacy for Scotland. Price 5½d.

From W. Heineman, London.

Mr Dooley's Opinions. Price 3s. 6d.

Notes on Foods, Drugs, etc.

Nitro-propiol.—We have received from **Messrs Burroughs, Wellcome & Company,** London, a sample of Nitro-propiol Soloids. Nitro-propiol is the commercial name for ortho-nitro-phenyl-propiolic acid, an organic substance which, when heated with grape sugar in the presence of an alkali, yields indigo-blue. By means of the soloids the reaction is easily and conveniently applied to urine. The presence of a blue colour on boiling indicates, as a rule, the presence of sugar. Nitro-propiol gives a distinct reaction when Fehling's solution fails. It is not, however, more certain or more delicate that the phenyl-hydrazin test. It is liable to the same fallacies which beset the reduction of copper in alkaline solutions. Normal urine contains substances which have the power of reducing copper, and the same substances will give the reaction with nitro-propiol. The test, therefore, though delicate and convenient, is not free from fallacy.

All Communications—including **BOOKS** *for* **REVIEW** *and* **EXCHANGE JOURNALS**—*are to be addressed to* THE EDITORS, 7 *Manor Place, Edinburgh.*

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THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

DREAMS

By SIR ARTHUR MITCHELL, K.C.B., M.D., LL.D.

(1) IN ordinary circumstances we are made aware of the existence of such things as chairs and tables through the sense of sight, but chairs and tables may, in certain conditions, be accepted by the mind as existing where they have no existence. They do not, in that case, reach the mind through the eye. They may be said to be seen directly by the mind itself without being imaged on the retina. The eye plays no part in this kind of vision. The mind, in other words, may be said, in certain conditions, to see, hear, touch, taste and smell, without the aid of the eye, the ear, or other organ of sense. But the things so seen or heard have no reality.

They are hallucinations. I give them that name because I can find no better. The word hallucination is of uncertain origin. Vossius sees *ad lucem offendere* in it — offending against the light of reason—and this appears to supply sufficiently what I want. My difficulty, however, is scarcely with the word itself. It is rather with the fact that it ordinarily occurs in an environment which differs from that in which I am now to use it. It is generally employed to describe a manifestation of disease—often toxic in its nature. It is, indeed, a name given to an outcome of disease. But the phenomena, which I here call hallucinations, are physiological. Disease plays no part in them.

It is beyond doubt, I think, that either sight, hearing, touch, taste, or smell may be concerned in the hallucinations to which I here refer.

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(2) I may safely say that no person ever gets through twenty-four hours of life without having hallucinations of this kind. They go, indeed, to make up our dreams. We see, and hear, and feel, and taste, and smell things in our dreams which have no reality, but which appear as *real* to the mind of the dreamer.

Perhaps the hallucinations of delirium, whether toxic or non-toxic, which are commonly regarded as occurring in persons who are awake but in some state of disease, may be more correctly regarded as occurring in persons who are only awake in a limited sense. They may, at least, be asleep to the extent and in the sense of being unable to control and direct currents of thought. Both the hallucinations which are pathological, and those occurring in dreams which are not pathological, may lead to various forms of action.

(3) In my opinion there is no such thing as dreamless sleep, and this short paper relates to that opinion. During the whole continuance of sleep the mind is, I believe, occupied with hallucinations. I do not expect to be able to *prove* the correctness of this opinion, but I think that some things can be said to show that it is possibly, if not probably, correct.

(4) It is not a new thing to hold that there is no sleep without dreaming—in other words, that dreaming goes on unceasingly all through sleep. I have stated the opinion broadly and strongly, but it has been nearly as strongly expressed by others. Sir Benjamin Brodie, for instance, may be said to express it when he writes: "I believe that I seldom, if ever, sleep without dreaming." Sir Henry Holland expresses it still more plainly when he says: "No moment of sleep is without some condition of dreaming." Godwin says much the same thing when he asserts that "sleep is not a suspension of thought"—in other words, that dreaming is sleep-thinking. Dr John Reid still more clearly holds the opinion, though he does not furnish me with a short apt quotation. I could easily multiply such sayings, but I have given enough to show that I am not alone in believing that all through sleep we never cease to dream.

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(5) I may safely say that everyone has some dreams which he thinks that he remembers clearly, and which he can recount in a fashion when awakened. I say "recount in a fashion," because he will rarely be able to recount them without a conscious editing. Usually the editing is free.

Often, however, when awakened he will assert that he had not been dreaming. He may assert this very positively. Nevertheless, it may happen that after the lapse of some time he may suddenly remember that he had been dreaming, and may even be able to tell what the dream was about.

If a person resolves every time he is awakened from sleep to ask himself *immediately* whether he had been dreaming, he will generally, if not always, be aware that he has just passed out of a dream, the details of which he may or may not be able to recall. It requires some determination to do this constantly and well; but I know a few resolute observers who for a considerable time scarcely ever failed to put this question at once to themselves on passing out of sleep, and who nearly always got a satisfying affirmative answer.

I think it may be accepted as certain that dreaming does occur, which may at first be wholly forgotten but which may afterwards be recalled. On the other hand, it may be forgotten, and never recalled. That is a reasonable assumption. It is at least possible, therefore, that there may be a great deal of dreaming which is forgotten. There is but little, indeed, of the dreaming we are conscious of having had which we remember with clearness, and not much which we even remember imperfectly. The watcher by the bedside of a sleeping person may have what he regards as satisfactory evidence that the person is dreaming, yet that person, when the sleep ends, may feel quite positive that no dreaming had taken place. The absence of a knowledge of having dreamed thus seems to furnish no proof that dreams have not taken place.

It is impossible to determine the extent to which this unremembered dreaming occurs, and therefore also impossible to say that it may not occupy the whole time of sleep.

(6) If there is no dreamless sleep, then it seems to follow that the brain is unceasingly at work either in sleep-thinking or in that thinking which goes on when we are awake. Both

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kinds of thinking differ much in different individuals. The habits, occupations and idiosyncrasies of individuals no doubt give colour to their dreaming. So also the thinking of persons who are awake differs much in quality and character, being influenced by constitution, habits, and many other things.

A great deal of the thinking-awake is nearly valueless, chiefly for the reason that it more or less resembles sleep-thinking.

There are persons, indeed, who can seldom be correctly described as quite wide-awake. But the quality of the thinking need not affect its continuousness either in those asleep or awake. There may be no stoppage of that part of the brain's work, as there is no stoppage of other parts of its work. The continuity of this part of brain-work may appear to prevent that rest and refreshment to the *mind* which we commonly regard as obtained through sleep, in consequence of its then ceasing. But rest and refreshment may come without a stoppage of work. Change may be sufficient—a change, in this case perhaps, arising out of the withdrawal of a compulsion to follow a particular course.

(7) In other parts of the work of the brain there is no stoppage. Its work, for example, in carrying on respiration and the circulation of the blood never ceases. The movements needed in these things are called involuntary, and they are correctly enough so called, though perhaps they are not involuntary in an absolute sense. The *thinking* part of the brain's work may also be regarded as in a sense involuntary, and, like other parts of the work of the brain, it may go on without stoppage while life lasts—under control of the will when we are awake, and without that control when we are asleep.

(8) It seems desirable that I should here say that I recognise the danger arising from the use of undefined, or rather, perhaps, undefinable words, but I feel obliged, or at least it suits me, to use some words of this character. I cannot, for instance, tell what is meant by *Will*, but I shall assume its existence, and use the word. Nor do I know of any satisfying definition of the words *Thinking*, *Sleeping*, *Dreaming*, and *Remembering*. But I shall use these and other

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such words as naming things which, in the opinion of the multitude, have an existence, and I do not think that this will cause any misunderstanding of my views.

(9) While we are using the thinking part of the brain's work in a state of wakefulness, we bring it under the control and direction of the *Will*. In other words, we do not allow it to go on without guidance. We direct it into certain channels and keep it there. We exercise an inhibiting power over it.

It has often been pointed out that there is nothing more laborious than the sustained exertion of *Will*, whether it be employed in things so different as attending to a subject of study, or directing our limbs in unwonted action. In forcing attention the *Will* becomes fatigued, and it is the *Will* which comes to need rest and which gets it in sleep. In the *Thinking* which goes on in the state of sleep there is an absence of all sense of weariness. It is not then under control or direction. It seems, if I may so write of it, to be left free to sport, and through this free unrestrained play, as well as through the *Will's* rest from work, refreshment appears to come to what we call *Thinking*, the weariness of which may be regarded as arising out of a forced subjection to the directing power of the *Will*. It is that directing power, however, which chiefly demands rest through a cessation of work, and it finds it in sleep.

(10) It is necessary to bear in mind that there are different degrees of sleep. This is evidenced in the familiar phrases—deep sleep, light sleep, broken sleep, half-awake, wide-awake. It would be easy to multiply phrases of a like kind which are in common use. The constant employment of such phrases points to a thing of importance. It is this. There is certainly an imperfect sleep and an imperfect waking. There is, indeed, every possible variation from complete wakefulness to profound sleep. The gradation of states which connects the waking and sleeping life of man has been called infinite, and not without reason.

(11) It has been alleged that during sleep valuable legal opinions have been written, difficult mathematical problems

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solved, and poetry and music of a high character composed. All such things I believe to be fables. Belief in them, indeed, has never been asked except upon slender evidence, which under careful examination has fallen to pieces. In dreams there is no coherent *thinking*, directed to a particular end and kept there. In like manner, though walking in sleep seems to be a well-established possibility, the stories of the wonderful and almost impossible balancings of sleep-walkers on roofs of houses and narrow ledges may be accepted as the outcome of a prevalent desire to manufacture the marvellous. None of them seem to me to be well-established, even admitting that the sleep-walkers were not in deep sleep.

(12) It is difficult to say how far a drowsy person is from what is called sleep. He may be very near it. He is practically asleep if he is exercising no control over his thinking, and the less the control he exercises the nearer he is to sleep. So it is also with the man who is in what we call a reverie or brown study, or whose mind, in popular phrase, is wandering. He may be looked on as in a state intermediate between sleep and waking. Going further, it can scarcely be questioned that there are persons who are properly enough described as rarely wide-awake, and whose ordinary thinking approaches in character to what I have called sleep-thinking.

(13) It has further to be remembered that states of full sleep may be, and often are, of extremely short duration—so short as to be accurately enough called momentary. Slumbering moments are not a fancy. Droppings into these short sleeps may occur with great abruptness, and the restored wakefulness may come as abruptly. Indeed a person may not be conscious that sleep has occurred. There may be a frequently repeated, as well as a rapid, passing from a state of wakefulness into sleep and out of it again. It has been actually observed to occur three times in a minute, but there is no reason for thinking that it may not occur more frequently.

A point of importance is that during these brief periods—these moments—of sleep, dreams and hallucinations occur,

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and in the study of apparitions this fact must not be lost sight of, for it is almost certain that many of the spectres we hear of are dream hallucinations in a full sense. They may occur in dreams during the momentary periods of sleep, into which persons fall, and out of which they come, with extreme abruptness and almost without consciousness of having been asleep.

(14) The character of the *thinking* in dreams is what we should expect, if the views I have been enunciating are sound. Sleep-thinking is rapid and confused—passes suddenly and frequently from one subject to another and from one place to another, without causing surprise—time and space are abolished—living and dead persons appear together in one place, and then instantly in some other far off place, either separately or in new associations—there is no coherence in the thinking—judgment is in abeyance—the most incongruous appearances or occurrences create no wonder, and there is often a confusion as to personal identity. The figures seen in dreams and the sounds heard in them have no reality. It may be that the figures seen in them and the sounds heard in them are largely furnished by the memory of former impressions on the senses, but it must not be forgotten that the figures of our dreams enter into combinations, undergo changes, and perform acts which have never been seen by us when awake. Dreams, in short, are by no means always mere echoes.

(15) There is another character of sleep-thinking which has great interest. It has been discussed with fulness by Miss Frances Power Cobbe. I refer to the alleged absence of the moral sense in sleep. It would shock us to know all the improper things which are done in sleep with unblushing effrontery by the most proper people. The sense that what we are actually doing is morally good or bad is never wholly absent in our waking hours, but, as Miss Cobbe says, perhaps a little too strongly, it is never present in a dream. We may at least go the length of asserting that "if the moral sense be not wholly suppressed in sleep, there is certainly evidence enough that it is only partially active." A kind-hearted person may commit a cruel, an honourable person a base, and a

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virtuous person an immoral deed in sleep, without feeling that anything wrong has been done. So much is certainly true. "Passions which never for a moment sullied our consciousness, sentiments the very opposite of those belonging to our idiosyncrasies present themselves in sleep, and are followed out by their appropriate actions, just as if we were then not ourselves at all." We do not even experience a feeling of surprise in dreams, when we find ourselves committing wicked and immoral deeds. We are neither troubled nor astonished by the wickedness.

(16) If I have been correctly describing the characteristics of sleep-thinking, I have been establishing, as I went along, an analogy between dreams and delirium. There is, indeed, so far as I can see, no difference of kind, but only a difference of quality between dreaming and raving. The two things are varieties of the same thing. In all large particulars they agree. There is in both the same rapid thinking, the same incoherence and irrelevance, the same existence of hallucinations, the same confusion as to personal identity, the same abolition of time and space, the same inaction of judgment, and the same absence of the moral sense. Dreams and delirium are alike manifestations of that *thinking* which is not under the control of the will. If the thoughts of the dreamer were manifest to the bystander, and if his state were persistent, he would be correctly enough described as in a state of mania. It is true the maniac appears to be awake, but this may be only true, as I have already said, in a limited sense. Like dream-thinking the ravings of the maniac appear to cause little or no fatigue, which perhaps explains why these ravings sometimes continue unceasingly and for a long time without ordinary sleep—there being no *Will*, in a state of weariness from work, to demand rest in sleep. I give a broad meaning to mania here, as the name of a raving mental confusion.

(17) There are, of course, differences between dream-thinking and the raving of delirious or maniacal persons, but they are scarcely more essential in their nature than are the differences between the character of thinking in the delirium caused by different forms of disease. The raving of a typhus

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patient is not the same as that of a smallpox patient, or of a person in delirium tremens. Each intoxicant seems to produce its own form of delirious thinking, but the differences are rather those of quality than of kind. They agree in essentials, and all of them appear to be illustrations of the thinking which is uncontrolled by *Will*.

(18) Perhaps it is desirable to point out that it is not necessary in order to induce a fatigue of the *Will* from work performed in controlling and directing mental operations, that it be exercised in efforts to keep the mind engaged in what is spoken of as purely intellectual work. The fatigue of the *Will*, for instance, may be as great, or nearly so, in the case of a compositor setting types. In the ordinary *Thinking* of persons who are awake, there are as many varieties of quality as there are persons, and also as many varieties in the power and quality of the *Will*.

(19) The *Thinking*, *Dreams*, *Will*, and *Memory* of infants need a separate telling. But so far as I can see, that telling would not disturb the opinion which I have been supporting. Then there are false reports to the brain by the sensory organs themselves in consequence of their being in a morbid condition, but it is not necessary for my present purpose to discuss these. They have no real bearing on the opinion that there is no such thing as dreamless sleep.

(20) My subject, I know, is one regarding which a great crowd of persons speak with the utmost confidence on what they hold to be most complete information derived nearly always from personal experiences, in which wonders greatly abound. This I have had well in remembrance, but it has not affected the views which I have expressed here as briefly and tersely as I could.

(21) If there be no such thing as dreamless sleep, it seems to me that the fact has not been so fully accepted as it ought to be, because it can scarcely fail to have important bearings in various directions. My only object in this short paper is to bring the opinion into prominence.

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CYTODIAGNOSIS OF PLEURAL EFFUSIONS[1]

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THERE are several varieties of pleural effusion where an examination of the cells in the fluid is as a rule unnecessary. These are the various forms of purulent effusion or empyema. Pus is pus all the world over, and its main scientific interest is not to be found in the cells which it contains, but in the organisms which cause its production and are to be found in it. It makes a great deal of difference to a patient's chances whether an empyema is due to the pneumococcus, streptococcus, staphylococcus, to the bursting of a tubercular cavity with a mixed infection of the pleura, to the bacillus typhosus, the bacillus coli and so on, but in almost all cases of empyema it is the organism which should be sought microscopically or by culture, while the exact look of the cells in the effusion is a matter of secondary importance.

It is in serous effusions that the cells are of importance, and the history of this question is of considerable interest. Pleurisy is one of the most common of acute chest affections, and for many years it has been matter of discussion whether the common acute serous pleurisy is rheumatic, tubercular, "idiopathic," or due to acute infection from one or other of the organisms of which I have just spoken in connection with empyema. The pendulum of opinion has swung now in one direction, now in another. At one time all serous pleurisies were dubbed "rheumatic," at another they were "idiopathic," and more recently the tendency to regard them all as tubercular has been steadily growing. Since the recognition of the importance of early diagnosis of tubercle of the lungs, this question has aroused even greater interest than before, because not only is the immediate treatment necessarily different according as one regards a pleurisy as tubercular or as idiopathic and harmless, but in many cases the whole future life of the patient will, or ought to, be coloured by the decision

[1] Read before the Edinburgh Medico-Chirurgical Society, 7th May 1902.

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arrived at. A certain proportion of cases does not come into consideration—those in which a pleurisy supervenes in the course of a phthisis already diagnosed, or where the physical signs are sufficiently definite to allow of a diagnosis on the first examination. It will very often be found in these cases that it is the lung whose pleura is not affected which is apparently further advanced in tubercle than the affected one.

But there are many cases where the lungs give us no help, and where the pleurisy occurs in people apparently healthy. Here all the ordinary means of diagnosis may be exhausted without a decision as to the nature of the case being arrived at. The case may be really phthisical, but the physical signs may be so slight as to pass undetected; and if it is the more seriously diseased lung whose pleura is attacked, the effusion may conceal the disease by relaxing the lung or limiting the movements of the affected side so as to weaken the breathing. On the other hand bronchial breathing and other auscultatory signs may be caused by the effusion itself and cannot be referred to a pre-existing tuberculosis. For similar reasons tubercle bacilli may be sought in vain in the sputum. Either there is no sputum, or what there is comes from the unaffected or less affected lung, or from the trachea and bronchi, and not from the relaxed lung. The injection of tuberculin for diagnostic purposes is also useless, for almost all of these cases are associated with fever, so that a rise of temperature could not be regarded as a reaction to the injection. The sero-diagnosis of tubercle has been found to be beset with so many technical difficulties, and even in the hands of those who have studied it to be so inconstant in its results, that it is quite valueless for practical purposes, whether it be applied to the serum of the blood or to the pleural exudate. The morphological examination of the blood does not give much help: in severe cases the leucocytosis may be high; there is usually only a moderate rise, and in slighter and more chronic cases the blood is practically normal. The differential leucocyte count has not yet been found to give any definite indication.

In the absence of general indications, the fluid drawn off by puncture falls to be examined, and the obvious thing to do is to search for organisms in it. It is perhaps hardly sufficiently realised that the organisms of acute infection, such as

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the streptococcus and pneumococcus, are capable of causing serous pleurisies as well as purulent effusions. These serous exudates may become purulent, but often either remain serous or are rapidly reabsorbed. In fresh exudates the organisms may be discovered by culture or by the microscope, but the fluid is strongly bactericidal, and after some time the organisms cease to be capable of cultivation, though they may still be found in the fluid, and finally they can no longer be discovered. Hence it is not proper to say, as some have done, that all effusions in which organisms cannot be found are tubercular. It is nevertheless true that in undoubtedly tubercular cases it is only very rarely possible to demonstrate tubercle bacilli either microscopically or by culture, either because very few bacilli are present, because they are destroyed or rendered incapable of growth by the fluid, or because the effusion is caused by the toxin rather than by the organism itself. In this dilemma use has often been made of that living culture-medium, the guinea-pig, and the pleural fluid injected intraperitoneally is often found to cause tuberculosis although no bacilli have been discovered. In addition, however, to the legal and other difficulties which surround this procedure, and to the length of time, three weeks, which must elapse before a conclusive result is obtained, one must bear in mind that it does not give a positive answer in all cases of undoubted tuberculosis for the reasons already given. It has been shown that a positive result is more frequent the greater the amount of fluid injected. 70 c.cm. seems to be the most convenient quantity, and this is of course much more than the hypodermic syringeful which is usually employed. Chemical examination of the fluid gives no assistance, and attention was turned to the cells to be found in the exudate. Widal and Ravaut (*Comptes rendus d. l. Soc. de biol.*, June 1900) in France, and Wolff (*Zeits. f. Klin. Med.*, 1901) in Germany, at about the same time published papers on this subject, and since then numerous communications have appeared, especially in France. In this country comparatively little has been done on the subject.

The methods to be employed are simple enough. The fluid is to be drawn from the chest with a syringe of any kind or size most convenient, provided that a sufficient quantity

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is procured to be centrifuged with ease. The syringe should be sterilised by boiling where this is possible, or, if antiseptics have to be used, should be thoroughly washed out with boiled water afterwards, as traces of antiseptics may destroy some of the cells present, or considerably alter their staining reactions. The only advantage of examining the fluid microscopically in the fresh state is that the number of cells present may be gauged. If they are numerous, the fluid need not be centrifuged; but the required number of cover-glass preparations may be made at once by putting a drop on one cover, superimposing another, sliding them apart, and allowing them to dry in the air. Too large a drop should not be taken, or if this has happened accidentally, the drying may be hastened by gentle heat. The procedure, so far, is exactly the same as that used for making blood-films, and the same care should be taken that the cover-glasses are perfectly clean.

If the cells are few in number, the fluid must be centrifuged, if possible before it coagulates; but coagulation does not, so far as I have seen, greatly alter the number or character of the cells present. Wolff recommends that, if the fluid is very rich in albumin, as most of them are, the supernatant liquid should be poured off, the tube filled up with normal salt solution, and the whole re-centrifuged. I have never done this, nor found it necessary. After centrifuging, cover-glass preparations are to be made from the deposit as above.

These cover-glass films can now be fixed by any of the methods in use for fixing blood-films; I have generally used my formalin-alcohol method. Theoretically, one would expect that any of the stains in use for blood might also be employed; but Ehrlich's triacid stain is not very serviceable, and those I have found most useful are eosin and methylene blue, either a saturated watery solution or Löffler's, Jenner's stain, and Pappenheim's modification of the triacid stain. Leishman's stain, and eosin and hæmatoxylin are less useful, as they do not bring out the granules of the polymorphonuclear cells, and it is often important to be able to do this, when degenerative changes have occurred in them. In order to show some of these changes, and for confirmatory purposes, it is often advisable to use Sudan III. or Scharlach R.,

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followed by hæmatoxylin, when fat is in question; or iodine, when glycogen is to be looked for. Wolff objects to the use of eosin, or any of the other acid stains in use, followed by hæmatoxylin or methylene blue, because he finds that the ground substance between the cells is coloured so deeply by the acid stain that it becomes difficult to differentiate between the cells. I have only been troubled by this when uncentrifuged fluid was used, and too thick a layer allowed to dry on the cover-glass. If the fluid be centrifuged, only a very small drop of the deposit need be taken; it should spread out evenly over the cover-glasses, and need give rise to little or no trouble in this respect, for though the amount of proteid in pleural fluid is often very high, up to 8 per cent., it is never higher than that of blood, and need not give rise to any greater amount of disturbance in staining.

The cells found in exudates may be classed according as they are derived from the blood or from the tissues. Shreds of fibrin are, of course, sometimes found, but are easily recognised.

CELLS FROM THE BLOOD.—Of these, there are red blood corpuscles, and of leucocytes, the polymorphonuclear neutrophiles and the lymphocytes of various sizes. Basophile leucocytes (Fig. *o*) are occasionally met with, but in no constant relation, though I have certainly seen them most frequently in tubercular cases; eosinophiles are almost never seen.

The red corpuscles show no changes of importance, as pleural fluid is practically isotonic with blood-plasma.

The polymorphonuclear neutrophiles may exactly resemble those seen in the blood, and usually do so in fresh effusions. But when the fluid has lain in the pleural cavity for some time, degenerative changes take place in these cells. They can hardly result from want of nourishment, but may be due partly to toxic influences, partly to deprivation of oxygen. These changes may be classified according as they affect the cell-body and granules and the nucleus, though, of course, in many cells both nucleus and cell-body are altered.

The cell body. (1) *Simple dissolution.*—When this occurs, the cell-body breaks up, and the granules, or microsomes, become free in the fluid; and, when this is examined in the fresh state, often look like minute fat globules, but when

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stained, are seen to be proteid in character. Some of the granules long remain adherent to the nucleus (Figs. *f*, *h*, *i*). In other cases, the granules disappear from the cell-body, which remains unaltered in size, or, at anyrate, they cease to stain characteristically (Fig. *g*).

(2) *Fatty degeneration.*—This change, which is very rare in cells circulating in the blood, is fairly common in exudates. It may occur in cells which are unaltered in size, or which have lost part or the whole of their granules. It cannot well be brought out by osmic acid, but shows best with the anilins which have a physical affinity for fat, such as Sudan III., or Scharlach R., which Michaelis has recently introduced. It is a change which occurs apparently with some capriciousness, and is often very useful in determining the character of degenerated cells, because it does not appear in the small lymphocytes. The fat globules are almost always small (Fig. *e*).

(3) *Glycogenic degeneration.*—Cells showing this change are often found in the blood, but appear to be more frequent in exudates. The granules of glycogen are brought out by exposing the dry films to the vapour of iodine, and mounting in gum saturated with iodine. The only diagnostic importance of this change is that it also does not appear in lymphocytes.

The nucleus.—This may simply lose its power of taking up basic stains, and look faintly coloured (Fig. *d*); but a very common change is to find it losing the intranuclear network and staining deeply and homogeneously, and in addition to find either that the lobes of the nucleus separate one from another and break up into fragments, each taking a part of the cell body with it, or that the nucleus as a whole runs together into a ball, staining homogeneously (Figs. *f*, *g*, *h*, *i*, *j*). These deeply-stained nuclei with a zone of cell-body around them which with eosin, for example, stains a deep pink, have been taken by some observers for nucleated red corpuscles, which of course could not appear in the pleura; or for lymphocytes, and they have been called "pseudo-lymphocytes" (Fig. *j*).

The lymphocytes.—These are generally exactly like those in the blood (Figs. *k*, *l*, *m*); usually the small lymphocytes are in the largest proportion, but unless the precaution has been taken to make the films thin, they are often not so well spread

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out as blood-lymphocytes and do not show the basophile rim so distinctly (Fig. *n*). Some authors, Wolff for instance, do not believe that the large lymphocytes (large mononuclear cells of Ehrlich) appear in pleural fluids (*Berl. Klin. Woch.*, 1901 and 1902), and think that the cells taken for them are in reality altered endothelial cells; but I have repeatedly seen perfectly typical examples (Figs. *l*, *m*). The lymphocytes do not appear to degenerate with anything like the same frequency as the polymorphonuclear cells.

CELLS FROM THE TISSUES.—The only cells which appear in ordinary effusions are the endothelial cells from the surface of the pleura. Sometimes these appear in clumps, when they are not easily mistaken for anything else, but more frequently they are separate. They are larger cells than leucocytes as a rule, have a round, or very frequently an oval, nucleus with distinct chromatin network, and a large cell-body which may have a regular round or angular oval outline, but is more usually ragged at the edges. Fat droplets sometimes appear in the cell-body. Wolff lays some stress on the phagorytic tendencies of the endothelial cells, and describes characteristic changes in them as a result of this process, but I am more inclined to regard the phagocytic cells which I have seen in exudates as large lymphocytes or hyaline leucocytes. It seems *a priori* unlikely that cast-off endothelial cells will indulge in cannibalism, and the cells I have seen, and those Wolff describes, are much more like the larger macrophages of lymphoid tissue. In any case they occur but rarely. It will be seen from Figs. *n* and *o* that the smaller of the endothelial cells are not unlike large lymphocytes. The extreme frequency with which fat droplets appear in them is one point of distinction. Another is the fact that like most connective tissue nuclei, their nuclei contain one or two large nucleoli, which can usually be made out, unless the cell is much degenerated. When the cell-body has quite disappeared, and when the nucleoli are not brought out, the distinction from lymphocytes may be very difficult.

For some years back I have been in the habit of examining pleural and other effusions in the way I have described, and have gathered a large amount of material. It is unnecessary to give a statistical account of this, however, for

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I have found my results largely anticipated and corroborated by those workers I have named (Wolff, *Forts. d. Med.*, April 1, 1902), and I may therefore simply give the general views held by all observers at the present time. Almost the only discordant voice is that of an Italian, Patella (*Deutsch. Med. Woch.*, April 17, 1902), who, on what seem to me entirely insufficient grounds, endeavours to show that all the different forms of cells observed, especially lymphocytes, are really degenerated endothelial cells.

Tubercular effusions.—In these the picture differs according to whether the effusion is examined during the first three days or later. At first the cells seem (I have no preparations of so early a date, and rely on Wolff's statement) to be mainly polymorphonuclears, but by the third day these have largely disappeared from the effusion and their place is taken by lymphocytes, so that the microscopic picture of an established tubercular pleurisy consists of lymphocytes, red blood corpuscles, a few polymorphs in some cases, and sometimes a very few endothelial cells. The lymphocytes and red blood corpuscles are present in nearly equal numbers, and the lymphocytes ought to be at least half of the true cellular elements (apart from red corpuscles), while in most cases they reach four-fifths or even more. The same course has been found in tubercular effusions produced experimentally, first polymorphs, later lymphocytes. I do not propose here to discuss the source of the lymphocytes, whether they are derived from the blood by chemotaxis, or whether they are cast off from tubercular granulomata of the pleural surface. The purpose of this paper is purely to point out diagnostic indications. I have laid special stress in the foregoing pages on the degenerative changes in other cells which cause them to look like lymphocytes, because of the great importance which a true lymphocytic effusion has. I have seen effusions in which the degenerated polymorphs which simulate lymphocytes were at least as numerous as the unaltered polymorphs, and here it would have been easy to come to an erroneous conclusion as to the nature of the case if one had not known the true nature of the cells in question. The small number of endothelial cells present in tubercular cases is generally explained by assuming that exudation rapidly covers the pleural surface in these cases.

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Effusions due to the pneumococcus and streptococcus.—These organisms, and probably all the others which can cause purulent effusions, have, when the effusion is in the serous stage, and in cases where it never goes beyond that stage, the same result. The effusions show at all stages a great preponderance of polymorphonuclears, unaltered or degenerated as the case may be, and often numerous endothelial cells, fresh or degenerated. Red corpuscles may also be present in varying numbers. The relations between polymorphs and endothelial cells vary greatly in different cases; the more acute the case and the more likely to go on to empyema, the more polymorphs will as a rule be present.

Œdematous effusions.—In these, whether they arise in heart or kidney cases, the cells are almost always very few in number, and consist mainly of endothelial cells, often lying together in clumps. The same holds true of fluid drawn from tissue œdemas in heart cases, for example, where the cells present are usually only those which might come from accidental admixture with blood. An exception must be made in cases where a pulmonary apoplexy occurs in a lung whose pleura already contains fluid. Here polymorphs appear in the fluid at the same time as blood appears in the sputum. I have examined two cases of effusion in leucocythæmias. In one, a lymphæmia, the effusion was œdematous in character, and showed only a few endothelial cells; in the other, a myelæmia, the fluid was rich in degenerated forms of all the varieties of leucocytes found in the blood. These were probably derived from some metastatic deposit in the wall—I had no opportunity of ascertaining this, however.

Malignant pleurisies.—My experience of these is comparatively small, as it happens that I have only come across three or four since I began to examine all effusions as a matter of routine. Little has been written on the subject. Generally speaking, cells of the malignant growth will be found in the fluid, often in great numbers (Figs. *t*, *u*, *v*, *w*, *x*). They are often swollen and œdematous, usually larger than any of the ordinary cells found, and showing abnormalities in the nucleus. They are often fattily degenerated. A certain proportion of polymorphs is present, and in one case of malignant disease of the lung with pleurisy which I examined I could find no tumour

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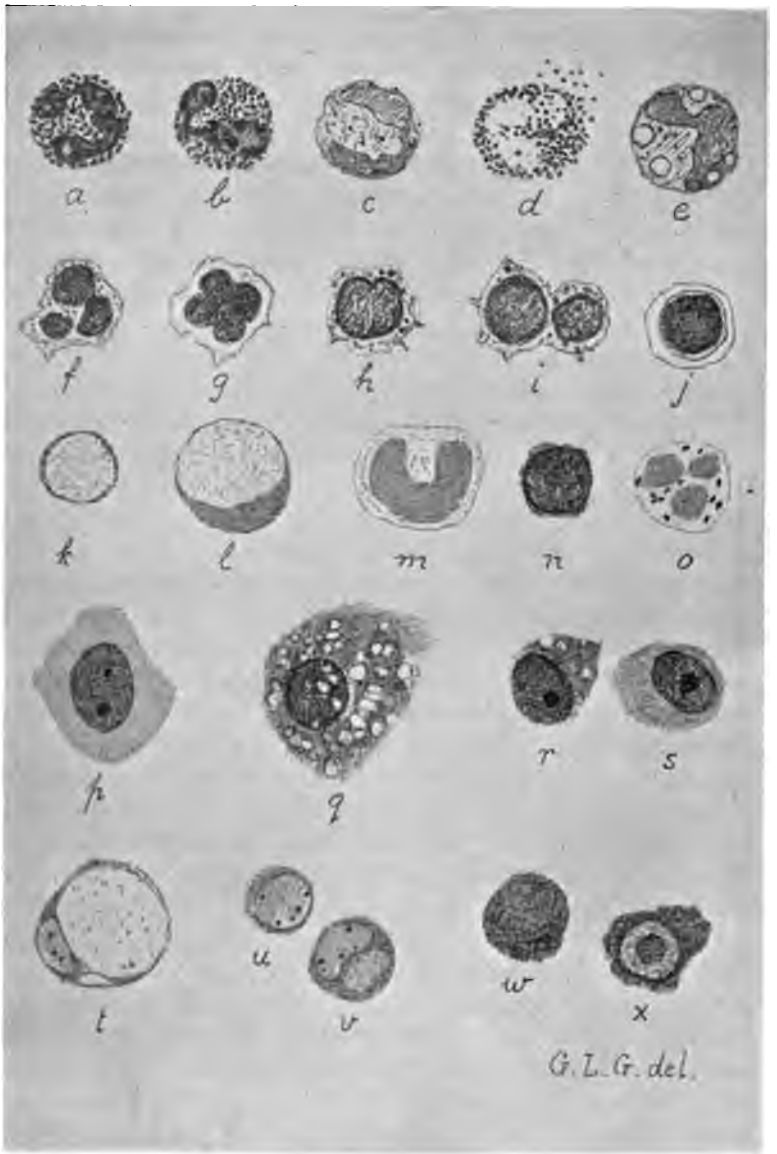

PLATE V.—TO ILLUSTRATE DR GULLAND'S PAPER.

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cells, and nothing but degenerated polymorphs. Here the pleurisy was probably due not to malignant infection of the pleura, but to an incidental bacterial infection.

I have said nothing so far as to pericardial and peritoneal effusions, and our knowledge of these is very limited. Pericardial effusions are not often examined; and while ascitic fluids are frequently enough obtainable, the peritoneum contains so many organs and ascites may be caused by so many different conditions that it has not yet been possible to reduce the appearances found to any rule. The pleura, on the other hand, is charmingly simple in its relations, and in the diseases which affect it. I have no experience of lumbar puncture and can therefore say nothing of the cells to be found in cerebrospinal fluid, nor, so far as my reading has gone, have any important results yet been arrived at in regard to it.

The methods I have described are not in practice difficult to carry out; anyone with a fair knowledge of histology and staining methods can manage them, and I have found them distinctly useful. I have been able to free some people from the suspicion of tubercle, and, unfortunately, have had to condemn others. Far be it from me to suggest that cytodiagnosis is to be allowed to usurp the place of other methods of examination; it can only be of value when associated with the minutest investigation in other directions, but as I have myself found it a valuable aid, I have described it and its results in the hope that others may similarly benefit.

Explanation of the Figures.

These were all drawn from actual cells, as nearly typical as possible, and are approximately on the same scale. Figs. *t*, *u*, and *v* are half the size of the others. In order to ensure similarity of appearance, all were taken from eosin-methylene-blue films.

a, *b*.—Typical polymorphonuclear neutrophiles.

c-j.—Degenerated polymorphonuclear neutrophiles, *c* to show faint staining of nucleus, and disappearance of most of the granules.

d.—Faint staining of nucleus and shedding of granules.

e.—Fat globules in degenerated cell.

f.—Nucleus breaking up into fragments, and staining homogeneously; most of granules shed; probably derived from a form like *a*.

g.—Fragments of nucleus clumping together, intermediate between *f* and *h*.

h.—One form of "pseudo-lymphocyte."

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i.—Degenerated form of cell like *b*; nucleus fragmented, and cell apparently about to follow.

j.—Another form of "pseudo-lymphocyte," probably derived from fragmentation of such a form as *i*; nucleus has slightly shrunk from cell-body. As the granules have disappeared, this form has been taken for a nucleated red corpuscle.

k.—Small lymphocyte, well flattened out, so as to show the basophile rim and faintly-stained nucleus.

l and *m*.—Large lymphocytes, *l* with faint round nucleus, *m* with horse-shoe nucleus (from different preparations).

n.—Small lymphocyte from thick film, not flattened out, so that nucleus is deeply stained, and rim hardly visible.

o.—Basophile leucocyte, faint trilobed nucleus, and a few granules (deep purple). In pleural fluids most of the granules seem to be shed.

p.—Endothelial cell from pleural surface, undegenerated.

q.—The same, fattily degenerated.

r.—The same, fattily degenerated.

s.—The same; note resemblance of *r* and *s* to large lymphocytes.

t, *u*, *v*.—Cells from malignant pleurisy, probably cancerous.

w, *x*.—Cells from malignant pleurisy, due to small round-celled sarcoma.

NOTES ON OPERATIONS PERFORMED ON ADULTS FOR CONGENITAL BLINDNESS[1]

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Translated from the Russian by G. L. CARRICK, M.D. St And., L.R.C.P.Ed., St Petersburg

DURING twenty-four years of hospital and private practice I have had three cases of congenital blindness in the adult caused by changes in the crystalline lens (milky cataract). All these patients, of the respective ages of 28, 18, and 16, were operated on by me successfully. I shall not take up your time by a description of the malady or the operation for its cure, with which you are already acquainted, but shall simply draw your attention to what seemed to me worth recording in these cases. Watching the results of operative interference in all these patients during the period of their regeneration from congenital blindness to sight, presented certain points of interest to the physiologist and the physicist. Thus one was able to make several noteworthy observations regarding, firstly, whether we *once*, on beginning to use our eyes, see objects just as they are, or whether it is only by experience and long practice that we learn

[1] Read before the Physico-Medical Society of Orenburg.

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which is the top and which the bottom of what presents itself to our sight; secondly, how the faculty of calculating space and distance in regard to our surroundings is acquired; and, thirdly, the influence of touch in determining the physical properties of matter.

These interesting points cannot be settled by observations on children that have just acquired sight, nor yet on adults who have been operated upon for senile cataract. Children are naturally unable to give us an account of their impressions, while those operated on for cataract appearing in advanced life are only restored to what they had been accustomed to contemplate in years gone by, and have therefore no new impressions to record.

In my cases, however, we had to deal with adults already mentally developed, only deprived from birth of the use of such an important sense as that of sight. These patients who had never beheld their parents, whose knowledge of the external world was limited to the senses of touch and hearing, etc., were introduced after being operated upon to a new, and, till that time, to them unknown world and surroundings. Such novel impressions on adults present this great interest that they can be put to the test, that they can be studied, and are capable of throwing light on certain dark and disputed points.

I have brought one of the patients to the Society in order that you may be convinced of certain interesting phenomena observed in his case. The person before you, A. Selutin, aged eighteen, says he never possessed sight, and could only distinguish between light and darkness; had never seen people, and recognised them by their voices generally; while inanimate objects he determined by touch, etc. He came to the hospital and asked if anything could be done for him. An examination of the eyes showed that the corneæ were transparent and transmitted light; so also the anterior chambers; the irides were normal, and dilated uniformly under the action of atropine; there were no synechiæ. The pupils were white, and the crystalline lenses were replaced by watery cataract (the fluid of a milky colour), in which there floated particles of, apparently, a limy nature. These were particularly prominent in the left eye; in the right eye the fluid was evidently of much thicker consistence, and no movement was discernible therein. On opening and closing his eyes the patient was able to distinguish light from darkness. As the optic nerve was not atrophied, an operation was therefore proposed.

On the 1st November, with a Graefe knife, I cut into the upper segment of the anterior chamber of the right eye, then opened the degenerated crystalline lens from which its contents, a milky fluid, escaped. The capsule was removed by pincers.

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An injection of atropine was then used, and a firmly-pressing bandage put over the eye. The first four days passed by satisfactorily; there was no pain in the eye, the patient felt well, and only complained of light entering the orbit, although he was kept in a dark room, and the eye and its surroundings were thoroughly protected by the bandage. On the fifth day the bandage was changed and atropine injected. The reaction was slight; the wound soon healed up, and the patient was able to see me. A lighter bandage was applied, but, in spite of the room being perfectly dark, there were complaints that light still acted as an irritant. On the 8th November the bandage was removed during the day, dark spectacles were temporarily resorted to, a shade was placed over the eyes, the blinds let down, and in that subdued light the patient commenced descrying and studying surrounding objects. November 9th he was able to see me and distinguish my face. On asking him whether I had a beard he smiled, and begged to be allowed to feel it. His fingers barely came in contact with it when he unhesitatingly exclaimed, "Yes." On placing a chair before him I questioned him as to whether he saw it. "Yes," was the reply. "What is it," I further enquired? "I can't tell, but would like just to touch it." He felt it for a moment and at once cried out, "a chair." The experiment was further conducted with an apple, and other surrounding objects such as a tumbler, a loaf of bread, matches, etc. In viewing each one of these objects he invariably failed to name it until he resorted to touch, when he at once recognised what it was. The most amusing puzzle to him was the apple: he tried many guesses, one wilder than the other, but no sooner was his finger brought in contact with the object he had found such difficulty to determine by sight than he called out, "Just fancy, an apple!" Up to the present moment, anything he sees for the first time he must feel before he decides what it is; afterwards he resorts to sight alone.

By the 15th November the patient had thoroughly studied all the objects in his ward and knew them by sight. I brought him paper of different colours, and taught him their names; he very soon learnt how to distinguish one colour from another. I now thought it time to test whether he saw objects in their real position or turned upside down. This interesting question as to whether, from the very beginning of the use of our sight, we see things as they are, or whether it is only subsequently, as a matter of experience or habit, that we commence doing so, could easily be decided by experiments conducted on a case like the present. In a book on "Physics" by Malinin of Moscow (1897), the author gives (p. 180) the following explanation in answer to the question as to why we see objects as they are

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once their impression on the retina is reversed: "The new-born infant, on his eye receiving impressions of outer objects, is still unaware that these objects exist outside himself, and gets convinced of that only by a long series of observations through the sense of touch; coincidently he also gets accustomed to regard what appears the lower point in his sight as really the upper point, and *vice versa*." In simpler language, it would seem, according to the above theory, that in our first experiences with the sense of sight, we see objects in accordance with their impression on the retina—*i.e.* upside down—and that it is only later on, and by means of extended practice, that we get accustomed correctly to determine the top and bottom of things, and are enabled to see them as they are.

If such an assumption is correct, then our patient, who has had no previous experience in the sense of sight, ought, as soon as he commenced using his eyes, to have beheld all objects reversed. With the view of determining whether such was the case, I took two broad slips of paper—a red and a green one (colours the patient could easily distinguish)—and placed the one above the other. On my asking which lay uppermost, he gave me a quick and correct answer. This experiment was repeated with the same result whether he regarded objects through a bi-convex glass (which supplied the place of the crystalline lens) or without it. On being told to touch the green paper, he at once, and without the slightest hesitation, stretched his hand upwards to the green slip. This test, which I now repeat in your presence, will convince you that our patient, without any preliminary training, saw objects as they stand, as there can be no question in his case about habit or experience. It would thus appear that the theory about *prolonged observation* above referred to is not supported by practice, the fact being that the *first time* we use our eyes we behold objects just as they are, and not reversed.

The appreciation of space and of distance, on the other hand, is only attained after prolonged practice. If, during the first few days, the patient made use of his sight, and he were told to walk across the room, in the middle of which a chair was placed, one could easily observe, by the way he walked round the chair, that he had but a hazy idea of how far away he was from it, for he either went straight on and came bump against it, or cautiously, and even timidly, passed it by, giving himself a wide berth. If he has to lay hold of anything, his hand seems to tack in front of the object in view before he touches it. You can even now convince yourselves of the correctness of what I am saying by a series of experiments proving that he has not yet practically solved the problem of

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space, and although he walks more boldly at present than he did at the beginning, he still distrustfully goes round objects he comes across, and even with diffidence passes through the doorway, and all this in spite of the fact that these surroundings are more or less familiar to him.

In drawing your attention to this patient I have intentionally left his right eye untouched, that you may have a chance of observing the structural changes therein. I shall presently operate on it, and, I trust, with a favourable result. The patient will be provided with bi-convex spectacles, to replace the absent crystalline lens, when he leaves the hospital for home, which he is most anxious to visit to have a first look at his father and mother.

I shall now briefly refer to two similar cases. T. Barsukof, aged twenty-eight, peasant, one of the pauper church pensioners of the village of Tashla, blind from birth, entered the Orenburg County Hospital in the spring of 1890; was never able to see objects, and could only distinguish light from darkness. On examining his eyes, I found that the corneæ and both chambers were quite translucent and admitted light; the patient, unwittingly, kept constantly rolling his eyes; the pupils were white and filled with a milky-coloured fluid, in which, when the eyes are moved, white particles are seen to float; there were no synechiæ. The pupils dilated equally on either side under atropine. In April the patient was operated on in the same way as the preceding case. The wound healed nicely, but the fear of light was very marked, and continued long (four weeks) after the operation, so that the patient had to be kept in a dark room all that time, and gradually trained to endure the light. Towards the end of May the second eye was operated upon, and with as favourable a result as the first. When, on the 15th June, the symptoms of photophobia had quite disappeared, he was left to himself in a half-lighted room. The first thing that attracted his notice was the floor. Unable to make out what it was, he touched it, and then at once perceived what he had to deal with. In a like manner he became acquainted with every object in the ward—always, however, being obliged to feel it before he could decide what it was.

The shape of objects—such as square, round, etc.—he could not define by unaided sight, and had to complete his observation with the assistance of touch. Later on, however, he was able to distinguish the form of matter by sight alone. On the 20th June I showed the patient slips of paper of different colours, and he soon mastered their names. On the 21st June, after carefully testing his knowledge of colours, I showed him a cylinder, the upper part of which was red, while the lower was

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yellow, and on my inquiring which colour was above and which below, he at once named their respective positions correctly. On asking him to touch the upper part of the cylinder, he quickly stretched his hand to that spot; the same test was applied in regard to defining the lower part of the cylinder, and with a like result. This experiment was repeated with the same issue when the by-convex spectacles were used, and thus clearly proved that Barsukof, in his first attempts to put his newly acquired sense to use, beheld objects just as they stand, and not reversed. The mastering of space and distance proved a somewhat difficult task to Barsukof. It was amusing to observe how cautiously, and at what a respectful distance, he would at one time go round any object, while on another occasion he would as suddenly come into collision with what was lying in his way. Long practice, however, taught Barsukof when to be bolder and when more circumspect.

I cannot help referring to one or two comic scenes in which Barsukof played a part during his stay in hospital, and while pursuing his ocular studies regarding the properties of matter. Thus, one day on entering the dimly-lighted ward in which he was kept, I found him gone, and while rebuking the attendant for having allowed a patient suffering from photophobia to leave the premises I was astonished to see Barsukof slowly creep out of the grate. On asking him what made him climb up the chimney, he said apologetically that he had noticed the fireplace for the first time that day; that he was unable to make out by external manipulation what it was, and that he had therefore undertaken an excursion into the interior, so as to be able there, at any rate, by a more extended application of the sense of touch, to decide what it was.[1]

In July I allowed him to leave his room and to take a walk, accompanied by an attendant, in the garden by moonlight. On passing through one of the alleys he kept jumping every now and then as though desirous of getting over something that lay in his way. The puzzled attendant asked him what it all meant, and was informed that the numerous objects lying across the road made the frequently recurring leaps necessary. Guessing what these impediments were, the attendant explained to Barsukof that it was not matter, but shadows—the shadows of the surrounding trees and their branches that lay across his path—the latter, however, unable to grasp the idea of a shadow, would not accept of so flimsy an explanation without putting it to the test, and continued his jumps till tired out. He at last,

[1] The peasants' cottages in Russia are heated by stoves, and open fireplaces are unknown.—TRANSLATOR.

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with the help of touch, satisfied himself that there was no physical obstruction on the road.

On leaving the hospital Barsukof got a pair of spectacles as a present, and to show how grateful he felt for restored, or rather acquired, sight, entered a monastery. Clever by nature, and of an enquiring mind, he learnt the alphabet during his stay in hospital, and could even make out certain words, but only when they were written in capital letters.

The third case was that of a peasant girl, Krooks by name, aged sixteen, who came to the hospital in 1891. The patient had never been able to see objects from birth. The corneæ and anterior chambers were transparent, and transmitted light; no synechiæ; with eyes open, can distinguish light from darkness. There was congenital milky cataract of both organs. On the 5th May one eye was operated on, and the wound soon healed up. On first making use of sight, she, just as the two preceding patients, had to bring touch to her aid when wishing to ascertain the nature of any object that met her view for the first time. After learning in such manner what that object was, she subsequently resorted to sight alone. She was soon able to distinguish colours. I repeated the experiment on her that I had made upon Barsukof with the coloured cylinder, an experiment the result of which deepened my conviction that she at once, on gaining sight, saw things as they are in nature. She arrived at a just appreciation of space and distance only after many trials and prolonged experience. In later years I came across her several times; she was married, was a mother, and, with the aid of glasses, saw fairly well.

In conclusion, I would desire to draw attention to the following points connected with the above-mentioned cases:—

1. In our first application of the sense of sight we also make use of touch on a large scale to ascertain the general appearance and detailed outline of objects, etc., and it is after that only that we arrive at a correct understanding of these objects, and remember them later on.

2. In the very first use we make of the organs of sight we at once see objects as they *are*, and not *reversed*, in spite of their being so reflected on the retina.

3. The above-mentioned cases, operated upon at the ages of 28, 18, and 16, clearly prove how little, comparatively speaking, the inhabitants of our part of the world are accustomed to seek medical advice. If such were not the case they would much sooner have obtained the surgical aid they sought so late in life.

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MEDICO-LEGAL INVESTIGATIONS

By W. RAMSAY SMITH, M.B., C.M., B.Sc. Edin.,
President of the Central Board of Health for South Australia, and
Coroner for the City of Adelaide

On the Principles Involved in Fractures of the Skull.

DESCRIPTIONS of wounds as they come under the surgeon's observations on the battlefield or in the base hospital, give but little help to the medico-legal witness. As a rule, suicides are not committed, nor murders perpetrated, by the most modern weapons; and carefully observed and accurately described wounds made by ·303's, dum-dums, Mark IV.'s, etc., are of little assistance in investigating wounds by revolvers, Sniders, and shot-guns, in cases where murders and suicides are in question.

Older books on Military Surgery, and observations of authors at a time when surgeons were searching for principles, prove of much interest and value to the jurist, surpassing those of recent times, in which principles are lost sight of, either in a mass of details, or in records of the results of operations or other forms of treatment. The statement of principles has not kept pace with the materials for formulating them at the disposal of the profession. My chief concern has been with the medico-legal aspect of injuries; and from the comparatively large number of cases brought under my notice, I have ventured to educe some principles that hitherto cannot be considered as settled, although many authors have searched for or discussed them.

It has been my fortune to see a large number of head injuries from bullets, and to compare these with fractures and injuries arising from other causes. As officer commanding a battery of field artillery, I have had opportunities of studying, in a practical manner, many of the problems connected with gunnery and projectiles. The facilities for observing the effects of the less modern weapons and ammunition are becoming fewer and fewer, and therefore it behoves us to make the most of them. This I have endeavoured to do; and I am glad to be able to hand over to the Museum of the Royal College of Surgeons of Edinburgh a collection of specimens to illustrate this subject.

CONCLUSIONS.

From a consideration of the various specimens, the following conclusions may fairly be drawn :—

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1. *The character of a gun-shot wound varies according to the hardness and velocity of the bullet.*—A hard bullet, or one with great velocity, pulverises at the spot; its characteristic action is intensive. A soft bullet, or one with less velocity, tears up softer tissues and splinters bones; its characteristic action is extensive. These statements are made apart from all considerations of special provision for "explosive" effects, such as hollow-noses, soft-noses, wooden-plugging. The diminution in velocity is the reason why wounds of exit are always at first more extensive than wounds of entrance; and it explains also, as Bell pointed out,[1] why entrance wounds, at first smaller than exit wounds, become, later on, larger. When in South Africa I had many conversations with brother officers regarding explosive bullets. Almost all the combatant officers were clear on the subject of the Boers having employed explosive bullets; but, on being asked if they had seen any such bullets, they almost invariably replied, "One could tell quite easily from the wounds"—these wounds having been effected at long ranges, and, as a matter of fact, being such wounds as would be caused by an ordinary bullet with low velocity. I saw nothing to support the accusation that the Boers used explosive bullets.

2. *The hole of entrance.*—This is invariably round, unless the bone is soft, or thin, or the bullet has been fired very obliquely to the surface. The hole may be of the same size as the bullet, or larger.[2] The bone at the spot is broken into several small pieces. The margin is bevelled internally, except in rare instances where the tables are spongy, the bevelling showing very accurately the line of fire. There may be no lines of fracture radiating from the entrance hole. On the other hand, there may be one or more lines from it passing outwards, which also may have cracks at right angles to them, thus forming a spider's web pattern. There may also be "concentric fracturing" at a greater or less distance from the margin and on the outer table. If the bullet should strike the bones at a suture it usually opens it up, and other cracks are generally at right angles to it.

3. *The hole of exit.*—This is larger than the hole of entrance, and its margin is bevelled externally. The fracturing results in pieces fewer in number and larger than those made at the hole of entrance. I have not seen a case where cracks have not radiated from the margin, but it is conceivable that such a condition might occur with a hard bullet of great velocity. I have not observed "concentric" fracture of either table. If the bullet should fracture the opposite side of the skull by internal impact

[1] "Operative Surgery," 2nd edition, vol. ii. p. 449.

[2] In specimens, which are not here described, of thin membranous bones, I have found the hole smaller than the bullet.

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without penetrating, the pieces are large and bevelling is well marked.

The subject of bevelling is rendered more intelligible when one considers the forces at work, especially in the light of the experimental fractures caused by a wedge-shaped spike driven into the skull, as in specimens Nos. 271 and 272. The wedge penetrates to a certain extent without causing much, if any, splitting. If forced further it acts on the outer table laterally in such a way as to split off a wedge-shaped piece from the upper surface. On the lower table it acts, not as a lateral force, if it be fairly blunt, but as a perpendicular force, thrusting part of the table before it, either as a single piece (rarely), but more often as several pieces which, combined, have a low pyramidal or conical form. The inner plate will be bevelled to a greater extent than the outer, provided that the instrument is not forced very far in; for it will be observed that the wedge removes a relatively larger piece of the inner table by its "perpendicular" action than it does of the outer by its "lateral" action. Further forcing down will result in cracks involving the whole thickness of the outer table some time before the wedge can act as a lateral compressing or fracturing force on the inner.

This wedge action in producing bevelling will become clearer if one considers what takes place when, say, a disc is buried in the earth and is pulled upwards. It will be found that it displaces the superincumbent earth in the form of a truncated cone, whose base is the surface of the ground, the extent involved varying with the nature of the ground in which it is buried. Conversely, if the disc be hammered down on the surface of the earth, the material affected will have the form of a truncated cone whose apex is the disc, and whose base is at a greater or less depth in the earth, according to the nature of the material and the force exerted on it.

A bullet is intermediate between such a sharp-pointed instrument as was used in the experiments, and a hypothetical disc such as is here presumed, not being pointed enough, when flattened after first impact, to produce "scaling" of the proximal table of entrance by exerting any lateral compression.

A consideration of this subject of bevelling explains some of the extraordinary cases met with in brain surgery. Hennen records a case in which he had to trephine over a bullet-hole in order to extract a piece of bone which had been forced into the brain, the internal table forming so large a part of its circumference that it could not be extracted through the hole in the external table.

4. *Locality of the bullet.*—I have not seen a case in which a bullet fired from a pistol or revolver has gone completely

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through the head. I have seen several cases in which the bullet, after passing through the skull on both sides, has been arrested by the skin, and has been removed by simply cutting through the skin. It will be understood that the skin forms a much more resisting barrier at exit than at entrance, since its distortability and elasticity are not counteracted by comparatively unyielding material on its distal aspect; and a pistol bullet, with such diminished velocity as results from penetrating two layers of bone, is rarely able to make good its exit through the last layer of skin. The bullet may break the skull at the point of exit and remain among the fragments or under them. Again, it may rebound from the interior of the skull and be found at the opposite side in the interior of the skull, *i.e.* at the same side of the head as it entered, after having marked the bone at the point of rebounding. It thus leaves two tracks through the brain. It may fail to reach the opposite side of the skull, and may consequently be found either in the brain or among the fragments of bone at the point of entrance. Finally it may hit the skull, break it in pieces, and, more or less flattened, may pass onwards with pieces of the skull clear of the head, as happened in the case of a man who committed suicide with a shot-gun loaded with a small, round bullet made of pure lead, similar to Specimen No. 289.

5. *Appearance of the bullet.*—This depends upon the hardness of the bullet and the conformation of the part of the skull struck. Hofmann makes the assertion that the shape of the spent bullet also depends upon its velocity—the greater the velocity the greater the flattening out. While this is undoubtedly true as regards bullets striking an impenetrable target, I believe that in case of a mark that is penetrable or breakable more careful experiment is required before the matter can be considered settled. Fairly hard conical bullets usually flatten out to some extent, and thus make a round hole larger than the original calibre of the bullet. The flattened out part may be stripped off and left outside the entrance wound on the bone. Sometimes the bullet becomes pointed in a different manner, the point being less elevated and its boundary line from tip to base being straight.

A bullet may become partly or wholly split, according to the conformation of the part struck. In Specimen 277 the bullet is seen partly split. In another case, specimen 256, one-half of the bullet became detached from the other, and was almost completely pulverised amongst the bones of the neck and the base of the skull.

As a rule, it will be found that bullets that have caused death by injury to the human skull do not present such an

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amount of distortion as those that have injured other parts of the body, or other animals.

6. *Fractures of the skull from bullets follow the same general lines as other fractures, so far as regards direction, relation to sutures, and the relative extent to which they involve the tables of the skull.*—This is one of the most important generalisations which a long series of observations and experiments has yielded; and the extent of its application is very remarkable. While there are many injuries that one can say positively cannot have been made by a bullet, I doubt if there is any single character that will enable one to say a certain injury was caused by a bullet and by nothing else. A bolt or other body may be forced through the skull in such a manner, either with or without radiating cracks, as to mimic perfectly a bullet-hole. Of course, in cases where there has been double penetration of the skull, the presumption in favour of bullet injury may be strong, but one cannot be too careful in giving an opinion even in those cases.

In examining injuries by bullets, one is struck by the strong tendency that is shown for cracks to run from wounds in the vault down to the base, as in the case of fractures of the vault arising from any and every cause. It was this fact that led me to inquire how far bullet fractures correspond with other fractures in other respects.

7. *The two tables of the skull act, to a large extent, independently of each other, as regards fractures.*—This applies both to the direction and extent of the fracture lines, as may be seen in many of the specimens. In cases where the sutures are obliterated on one table, but patent on the other, this independent behaviour is particularly well marked.

Here I may call attention to the fact that the inner table may be fractured and depressed to either a greater or a less extent than the outer. The statement made by Gant that "Fracture of the inner or vitreous table is always much more extensive than of the outer table," would appear to be applicable only to gunshot wounds, although the limitation is not clear.

8. *Obliteration of sutures favours the extension of fractures.*—It was for long disputed whether a fissure could pass over a suture of the skull. Daniel Turner, in discussing this subject in an admirable resumé of fractures of the cranium,[1] says he does not see how contra-fissures, otherwise *resonitus*, can occur, unless in cases, not often met with, in which the sutures are obliterated, seeing that "where the Globe is divided into several Sections, however close they are held together, yet will the Force break through the first of these upon striking either. Now the same

[1] "The Art of Surgery," fifth edition, 1736, vol. ii. p. 191.

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Office that these sections perform, in warding off the Blow, affecting Parts at greater distance, especially such as are opposite, or stopping its farther Progress, is done by the Indentures, called, by Anatomists, the Sutures in a human Skull."

The specimens I have described show very plainly how fractures behave with regard to sutures. Summarised, the conclusions are: (*a*) a fracture may stop at a suture; (*b*) it may pass over a suture in a straight line; (*c*) it may pass along a suture, opening it up or not, and may then leave it at a more or less obtuse angle, whether the suture deviates from the straight line of fracture or not. The more compact the suture, the greater is the likelihood of a fracture passing across it.

9. *Fractures may cross foramina.*—There is, at least, one instance of this in the collection — a fracture crossing the foramen magnum.

10. *The skull is very elastic.*—It is this elasticity that is the great cause of rupture of the extra-dural vessels, and that also makes fracture of one table possible by impact on it of the other, without fracture of that other. By elasticity, I mean the property of returning to the original shape after a distorting force has been removed. Specimen No. 260 illustrates this well. The outer table recovered perfectly its original position after displacement, and in the rebound it caught and imprisoned a lock of hair. There is a linear fracture of the inner table, corresponding to a linear fracture of the outer. The question arises whether such a linear, or other, fracture of the inner table could occur without fracture of the outer. Daniel Turner says: "The outward Table I have seen depressed, when the inner had escaped and continued whole: but I cannot say I have ever discovered the inward fractured or beat in, the outer at the same time whole; though I shall not take upon me absolutely to deny the Possibility of these Accidents at times, and in some Skulls, having several Authorities to countenance the same, particularly those of Celsus, Valeriola, Nich, Florent, as also Fallopius, who acquaints us, that after Death he had opened several Heads, where immediately under the part the Blow was given, he could discover nothing, yet on that opposite, great quantity of Matter was collected: but this might be the effect of concussion simply, or Extravasation from the Vessels, by the force of the same, without that *αποχείμα*, or *Resonitus* in the Bone itself."

From this quotation it is not clear whether Turner and the authors he quotes were talking of the same thing: but he goes on to mention actual cases of fracture of the inner table without injury of the outer, from Parey, Fallopius and Cortesius.

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Hennen[1] records a case that occurred in the practice of Staff-Surgeon Cooper at Waterloo, where a bullet, without fracturing the outer table, caused a fracture of the inner with splintering, the pieces being "driven at one point more than half an inch into the membranes and substance of the brain."

Fracture of the inner table, without injury to the outer, is very rare; but Gant[2] says he finds twenty instances of this fracture recorded in the "Surgical History of the American War, 1861-65." I have succeeded in producing it experimentally. Specimen No. 608 is a very good example of it, resulting from accident to the living subject. Teevan has produced not only this sort of fracture, but also fracture of the outer by impact on the inner table without breaking.

It is the skull's property of elasticity that makes extra-dural hæmorrhage so common with or without fracture. In Hofmann's "Atlas of Legal Medicine," Plate 8, there is a drawing, with description, of a case of extra-dural hæmorrhage in a boy, caused by a fall on the side of the head, without external mark, and with consequent fine fracture of the skull, spreading from the parietal bone to the left middle fossa of the skull, where it gave off several branches, and ended in the foramen spinosum. Symptoms were delayed, the boy being able to walk home. A rupture of the middle meningeal artery was found *post-mortem*.

A specimen of skull-cap with brain *in situ*, which I sent to Sir William Turner, is an exact counterpart of this drawing; and the history of the case is strangely similar in its details. One man hit another, who was drunk, with a broom handle, on the left side of the head, leaving no external mark of injury or contusion. The drunk man, twenty-eight years of age, was taken to hospital by the police, where he was examined. Being found in a fighting, quarrelsome, and excited state, he was sent to the police cells. There, after a time, symptoms of compression appeared, and he was again taken to hospital, where he died eight hours after the injury. *Post-mortem*, an extensive fracture was found on the left side of the skull, involving the parietal bone, and spreading to the base, as seen in the photograph, Specimen No. 262. The blood clot measured two and a half inches by one and a half in its extreme diameters.

This case, like Hofmann's, is a very good illustration of what

[1] "Military Surgery," third edition, 1829, p. 326.

[2] These statements require careful sifting. For example, Gant ("Science and Practice of Surgery," 2nd ed., vol. ii. p. 120) says, "The inner table may be broken and depressed without a trace of injury about the outer parts of the bone (Fig. 596)." But on referring to an extended description of his drawing in a footnote, it appears that the skull referred to in illustration of the statement had, on the outer surface, an extensive linear fracture of both parietal bones, and umerous fissures of the left parietal in the external table.

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Percival Pott [1] described regarding this form of head injury: "By blows, falls, and other shocks, some of the larger vessels which carry on this communication between the dura mater and the skull are broken, and a quantity of blood is shed upon the surface of that membrane. This is one of the species of bloody extravasation, and indeed the only one which can be formed between the skull and dura mater."

Pott proceeds to speak of the results of another form of injury to these vessels, in which "the vessels which carry on the circulation between the pericranium, skull, and dura mater, are so damaged as not to be able properly to execute that office, although these are none so broken as to cause an actual effusion of blood." The intimate connection between the pericranium and the brain, including its membranes, has long been recognised. Hunter called attention to the fact that, from a slight blow on the head, the membranes of the brain oftener suppurated than the tibia and fibula do from a similar blow on the skin. Charles Bell said, "There is an intimate sympathy existing between the brain and the scalp." Abercrombie has an interesting chapter under the heading, "Of Certain Affections of the Pericranium," in which he shows the intimate connection between scalp and dura mater. This sympathetic connection, which Bell attributes to the nerve supply, must not lead us to under-estimate the direct communications between pericranium and dura mater through the medium of the blood-vessels. Apart from the fairly constant parietal foramina, of which a good example is seen in Specimen No. 222, there are many large, and unfortunately irregular, foramina containing blood-vessels, and so disposed as to seriously disconcert one in coming to a diagnosis or deciding on a course of action in certain cases. All this is of great importance in the question of "What to do in any given case of head injury," a question that fortunately is very seldom asked of the medical jurist. The summary by Francis Adams in the Sydenham Society's edition of Hippocrates' works would form a very useful subject of discussion by a chirurgical society. Such a discussion would show how very little is even now settled regarding the surgical treatment of head injuries.

11. *Fractures may commence at a distance from the point of impact.*—Such fractures, in classical works, are termed Counter-Clefts (Contra-Fissuræ) and Counter-Fractures (Contra-Fracturæ). Specimen No. 253 shows what I have called an "interrupted linear fracture." The part of the skull where the bone was unbroken was the point of impact, and from near this the fractures extended in two opposite directions. A case

[1] "The Surgical Works of Percival Pott," 1779, vol. i. p. 31.

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very similar to this is described in Hofmann's "Atlas of Legal Medicine," Figure 87, under the title, "Fracture of the Skull due to Compression." In this case a blow on the vertex left the bone there unbroken, but caused a linear fracture from the anterior third of the inter-parietal suture down the frontal bone to the ethmoid; and a second fracture from the posterior third of the inter-parietal suture extended into the left posterior fossa of the skull. Hofmann says this case represents in a certain measure "a type of fractures due to compression. These are caused by a sudden force striking the skull, and causing a compression of it in the direction of the force, and distension in the direction of a line at right angles thereto. Thus the skull, similarly as a compressed hazelnut, fractures at the point of greatest distension situated equatorially to the point of impact of the force. On the one hand, then, the fracture ascends meridianly toward the point of impact; and on the other, continues toward a point situated oppositely. Thus is explained why the fractures gape mostly at a situation most distant from the point of impact, and toward the latter become hair-like; and why, as is particularly evident in the present case, the fractures do not necessarily reach the point of impact nor the opposite point of the skull."

Several questions immediately present themselves regarding this description. Does Hofmann assume the condyles as an actual opposite pole of resistance[1] in his theory of fracture by compression? In my case such a pole existed only as a "potential," if one might use this term to describe a pole, the force at which was simply its inertia or momentum. The maximum gape in both cases was at an equatorial point; and in my specimen, as in his, the fractures did not reach the opposite pole: but if this is all a question of compression why did the lines of fracture in both specimens take a meridianal instead of an equatorial direction? (*cf.* Specimen No. 265 for equatorial opening up of the sagittal suture.) From a consideration of my own specimen alone I was led to think that the lines of cleavage of the skull had something to do with this fracture as with other sorts, and I still incline to that opinion which Hofmann's own remarks on another case (fig. 86) seem to bear out. The name, therefore, "interrupted linear fracture," as being a description of this injury, appears preferable to the designation, "fracture of the skull due to compression," which involves a theory that may or may not be altogether true. "Specimen No. 608 may be looked upon as an example of equatorial opening up of the coronal suture and extension of fracture to the base from impact

[1] To test this I repeated Humphry's experiment of dropping a dried skull on its vertex. The result is recorded in Specimen No. 601.

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on the frontal bone, the anterior extremity of the fracture of the inner table only being the mark where the impact affected the outer; and in Specimen No. 253 the limb of the fracture crossing the coronal suture is perhaps an example of opening up in an equatorial direction."

In connection with this subject of linear fractures I would draw attention to the Specimen No. 254, exhibiting parallel and unconnected linear fractures of the occipital bone, a condition that I cannot account for, but one that shows, like the preceding, that two fractures, either in one line or parallel, may result from the same impact, a fact of paramount import in medico-legal matters.

If this "interrupted linear fracture" or "fracture due to compression" be the same thing as fracture by *contre-coup*, and it appears to be what many writers on *contre-coup* understood by that term, then the subject cannot be cavalierly dismissed after the manner of Guthrie who says, "Whatever may have happened formerly, there is so little proof of such occurrence having taken place of late years that the accident generally is altogether unnoticed by writers on injuries of the head"; for one who denies fracture by *contre-coup* may find on further investigation that he has been dealing with them to a large extent all his life.

12. *The point of impact cannot be determined, in any given case, solely from such characters of simple and single fissured fractures, as their direction and the manner in which they "tail."* —This follows as a corollary from the principle stated in the last paragraph, and from a consideration of the appearances of ordinary fractures that occur at the point of impact.

Demonstration of Investigations being carried on in the Laboratory of the Royal College of Physicians

ON the invitation of the Superintendent and workers, the Fellows of the Colleges of Physicians and Surgeons had an opportunity of seeing some of the investigations at present in progress in the laboratory on Friday, May 16 and 23.

At the first demonstration the superintendent, Dr Nöel Paton, said that he had asked the authority of the Laboratory Committee and Council to give these demonstrations for two reasons: first, because he thought it right that the Fellows should know something of what was going on in the laboratory which they supported; and secondly, because he felt that in Edinburgh pathology was too much regarded as co-extensive

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with morbid anatomy, and that the experimental side of the subject was too much neglected. He further indicated that the present demonstration could not be systematic, but that all that it was possible to do was to enable the Fellows to witness some of the experiments which were in progress in the course of the various investigations.

He then discussed the work which had been done in the laboratory on the relationship of the liver to sugar formation, and passed on to consider the pathology of diabetes, showing the condition as produced by Bernard's puncture, by phloridzin and by adrenalin. The possible relationship of the last form of glycosuria to Minkowski's pancreatic diabetes was discussed.

He also gave an account of Dr Scott's recent experiments on the toxic action on the metabolism exercised by large quantities of glucose given subcutaneously.

Dr Francis Boyd then gave a demonstration of the action of various substances, other than sugar, which may be present in the urine and which are capable of reducing cupric to cuprous oxide.

At the second demonstration he showed two rabbits in which cerebellar lesions had been produced in the course of an investigation on the connections of the flocculus. He contrasted the results of injury to the restiform with those of removal of the flocculus, and stated that the degenerations are being investigated by Dr Bruce.

Dr Edwin Bramwell then showed guinea-pigs with the characteristic symptoms of Brown Sequard's epilepsy, and discussed the nature of the condition.

Another demonstration was to be given on May 30.

Meetings of Societies

Edinburgh Medico-Chirurgical Society

THE ninth meeting of the session was held on Wednesday, May 7—Professor T. R. Fraser, the President, in the chair.

Dr Norman Walker showed some cases of lupus treated by various methods of photo-therapy. He found that when the X-ray treatment was combined with the application of pure carbolic acid the improvement was very great; indeed, he considered this double method a long way ahead of the others. The absence of contraction of the scar was most noteworthy, and though the first series of carbolic acid paintings caused pain and sloughing, the later applications were not followed by these

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effects. In one case where there had been marked ectropion the mucous membrane had been converted into skin.

Mr Alexis Thomson showed a young woman after a cosmetic operation, viz., removal of hyperostosis of upper jaw and malar bone (with photographs). The swelling was evidently congenital in origin, but since she had been struck on the face by a stone several years ago it had increased in size. The deformity consisted of a projection of the malar bone, and it was decided to remove the surplus bone. The cheek was reflected as for removal of the upper jaw, and the surplus bone, which was found to be soft, removed with a chisel. There was still a good deal of œdema.

Dr M'Bride showed a young woman with nasal deformity treated by paraffin injection. The bridge of the nose had been quite restored without pain or reaction. The paraffin was inclined to choke the needle, and precautions to prevent this must be taken. Gersuny of Vienna, the originator of the method, used a mixture of hard and soft paraffin with a melting point of 104° F., while Eckstein uses hard paraffin.

Dr Bruce showed several cases of paralysis and spasm of ocular muscles, and two cases of spastic paralysis following whooping-cough.

Mr Cotterill showed a case of multiple schirrus treated by oophorectomy and X-rays. In the end of 1900 the right breast was removed for schirrus, but there was recurrence in both breasts and in numerous glands. Oophorectomy was performed. For four months there was marked improvement, and then menstruation returned. Treatment by the X-rays and ultra-violet rays was then tried by Dr Dawson Turner five minutes every other day, with the result that many of the nodules have disappeared on the side to which the rays were applied, but in other parts nodules have appeared since the treatment commenced.

Mr Cotterill also showed a rare case of multiple arthritis in a boy—tubercular arthritis in four large joints, which was improving under Scott's dressing.

Mr Stiles showed—(1) A boy, aged six years, after operation for a large intra-dural abscess following middle-ear-disease. The patient was admitted to the Royal Edinburgh Hospital for Sick Children four weeks ago, with a discharging sinus in the right of the fronto-parietal region, 1½ inches from the middle line. A probe introduced into the sinus was found to pass through the bone, and to extend downwards and forwards as far as the floor of the anterior fossa of the skull. There was no discharge from the ear, but the tympanic membrane was destroyed, and an examination of the eyes, by Dr Argyll

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Robertson, revealed post-inflammatory atrophy of both discs, with complete blindness of the right eye. Speech and mental perception were very slow. There was no facial paralysis, but the grip of the left hand was feeble as compared with the right. The history was, that in the end of November of last year (five and a half months ago) the patient suffered from an attack of acute right-sided middle-ear suppuration, which was followed, three months later, by a general convulsion and paralysis of the (opposite) left side of the face and the left arm. The paralysis gradually improved. Seven weeks ago an abscess which had suddenly appeared towards the upper part of the scalp on the right side was opened by Dr Robert Robertson, who, on finding the bone perforated, recommended the patient to the hospital. At the operation, which Mr Stiles performed four weeks ago, after excising the sinus and granulating area of the scalp, a flap was turned down exposing a small perforation in the bone opposite the coronal suture. A circle of bone was removed, and a corresponding opening in the dura discovered. On dilating this with sinus forceps a quantity of pus escaped. The dura was then incised, and on introducing the finger a large cavity, containing three or four ounces of pus, was discovered between the dura and the brain.

The drain was removed a few days ago, and the sinus is now practically closed. There is already a considerable improvement in the mental and general condition, and the grip of the left hand is much stronger. The case is of interest as illustrating a rare sequela to a complication of middle-ear disease, viz., the pointing of a localised suppurative lepto-meningitis through the coronal suture. The pus gave a pure culture of the streptococcus pyogenes.

(2) A child, aged three and a half years, after reduction, fifteen months ago, of a congenital dislocation of the right hip by Lorenz's method. After reduction the limb was put up in plaster in the hyper-abducted position for two months; the abduction was then reduced, the plaster reapplied, and the patient allowed to go about with crutches and a high boot on the sound side, so as to throw the weight of the trunk on to the head of the femur of the affected side with the object of gradually deepening the shallow acetabulum. The subsequent steps in the treatment consisted in the further reduction of the abduction and the lessening of the height of the boot. For the last three months she has been going without either plaster or high boot.

Mr Stiles emphasised the importance of diagnosing congenital dislocations of the hip in early childhood, since at this age the dislocation can almost invariably be reduced by the bloodless method, and he thought the present case would

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convince the members of the excellent result which can be obtained by Lorenz's method. The patient exhibited was no longer lame; the trochanter was at its normal level, and no longer ascended when the weight was borne upon the limb; the head of the femur could be distinctly felt at the base of Scarpa's triangle; abduction was no longer limited, and adduction could not be carried further than on the sound side. The skiagrams, taken by Dr Rainy, illustrated, in an admirable manner, the position of the head of the femur (1) before reduction, (2) after reduction with the limb hyperabducted, and (3) after the treatment had been completed.

Mr C. W. Cathcart showed a stretcher adaptable to the Trendelenberg position.

Drs Melville Dunlop and Stuart M'Donald showed a specimen of liver from a case of congenital obliteration of the bile-ducts.

Mr Caird read a paper on "Gastro-enterostomy—twenty cases—performed for Intrinsic Stenosis of the Pylorus,"[1] and Dr Lovell Gulland a paper on "Cyto-diagnosis in Pleural Effusions" (with microscopic demonstration).[2]

A CLINICAL meeting of the Society was held in the Royal Hospital for Sick Children on Wednesday, May 21st—Professor T. R. Fraser, the President, in the chair.

Dr Burn Murdoch showed two cases of basal meningitis in which aspiration of the ventricle had been practised. To diminish the amount of secondary hydrocephalus and the optic atrophy, an ounce of turbid serum was drawn off from the ventricle two or three times. In both cases Weichrelbaum's bacillus was present.

Dr Burn Murdoch also showed cases of congenital hydrocephalus, microcephalic idiocy, double infantile paralysis and bronchiectasis.

Mr Stiles showed a child with extensive nævus, cutaneous and subcutaneous, involving capillaries and small veins. He considered the actual cautery a better method than electrolysis. Mr Stiles also showed a very marked case of cancrum oris after operation. It had been excised and painted with Merck's peroxide of hydrogen, which was three times the strength of the pharmacopœial preparation; a good result had followed.

Mr Stiles also showed a case of diffuse tubercular osteomyelitis of both tibiæ; the best plan of operation was to shell out subperiosteally and then stitch the muscles and periosteum together.

Mr Stiles showed cases of excision of elbow, knee, and ankle by the methods of Kocher. He pointed out that the advantage

[1] Will appear in a future number. [2] See p. 490.

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of an external J-shaped incision in the case of the knee was that the quadriceps extensor remained uninjured; the femur should be pared convex, the tibia concave, and a rigid joint aimed at; the result would be failure if a movable joint were the aim. He emphasised the great advantage, after knee excisions, of putting up the limb in the vertical position; the weight pressed on the femur and the child was kept clean. No drainage tube was used and therefore no dressing was needed.

Mr Stiles showed a case of microcephaly after operation by Dumont's method of linear craniectomy. With Dr John Thomson, Mr Stiles exhibited a case after operation for congenital hypertrophy of the pylorus, with photographs and sections showing the great hypertrophy of the muscular coat of the stomach wall and pylorus. This condition was more common than was supposed; the baby is perfectly healthy at birth, but from a few hours to six weeks afterwards it begins to vomit, and in spite of all sorts of treatment this ends fatally. The vomiting is not accompanied by signs of indigestion or diarrhœa. After pylorectomy the pylorus is best dilated with a tracheal dilator which opens in three directions.

Dr Melville Dunlop showed a case of hemihypertrophy in a boy of nine. During the three years he had been under observation the increase on one side had been maintained and the differences remained practically the same. The temperature was 1° higher on the hypertrophied side, and on that side the sweat glands were very much more active; the bones were thicker, as well as the soft parts, and there was increase in length as well as girth. The head and face were not affected. All over the body were capillary nævi, especially on the affected side.

Dr Dunlop also showed a case of persistent purpura in a girl aged eight. At first the size of a flea-bite, the spots ultimately became as large as a saucer. On the roof of the mouth were well-marked hæmorrhages. There had never been hæmaturia or hæmoptysis, the spleen was normal, and the child was healthy. Treatment by calcium chloride, adrenalin, and other remedies had proved resultless. Dr Dunlop then showed two cases of pseudo-hypertrophic paralysis and a case of pseudo-leukemic anæmia; also five cases of abdominal tuberculosis, which had been completely cured by feeding with strong soups, milk and eggs, by open air, massage, and oleate of mercury ointment; there had been no surgical interference. In all the cases there had been pyrexia, sweating, diarrhœa, resistant abdomen, huge abdominal glands, and matting of intestine.

Dr John Thomson showed: (1) a boy, aged three years, with marked hysterical symptoms; (2) six cases of Mongolian

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imbecility, so often mistaken for cretinism; (3) two cases of congenital rickets; (4) a case of achondroplasia. In the last the marked shortness of the legs and arms was well seen; the fingers were very short and much nearer the same length than usual, while between the middle and ring fingers there was a noticeable space. The boy was 14½ years old, but had only attained the height of one of 7.

Dr J. C. Dunlop showed an early case of microcephaly, a case of congenital heart disease, and a case of Mongolian idiocy complicated by rickets, in which anti-rachitic treatment, viz. phosphorus, had been followed by improvement in the mental condition.

Dr J. S. Fowler showed a case of so-called congenital rickets, a case of hemihypertrophy, a case of rheumatoid arthritis, and a case showing the results of simple basal meningitis.

Dr J. W. Simpson showed cases illustrating early diagnosis of rickets.

Edinburgh Obstetrical Society

THE sixth ordinary meeting of this Society was held on the 14th May—the President, Dr James Ritchie, in the chair.

Professor A. R. Simpson showed several specimens, amongst the most interesting being: (1) an anencephalic fœtus presenting at the same time spina bifida and exompholos; (2) dermoid tumour of right ovary together with cystic degeneration of left ovary in the same patient; (3) solid ovarian tumour of very large size which had existed for long in the patient but necessitated removal on account of the pedicle becoming twisted; (4) hydatid cyst of the ovary. This was a very rare specimen, as it was only about the fourth case of the kind which had been recorded. It occurred in a woman aged twenty-eight. At the operation the sac was found to be thin-walled but adherent throughout its whole extent to the omentum, peritoneum, organs in the pelvis, and especially to the sigmoid flexure of the large intestine. It seemed to be a dermoid tumour of the ovary, though at the operation some clear fluid escaped, but this might have been from a parovarian cyst. The union of the cyst wall to the large intestine was so close that there was very great danger of opening into the latter. However, it was removed in its entirety and without rupture. On incising the tumour next day a very large number of echinococci cysts escaped. It was a hydatid cyst of the ovary. Schultze of Jena had described two such cases, and about fifty years ago Dr Corrigan of Dublin had noted a case which might

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have been one of hydatid disease of the ovary, but the record was not very clear. This case was probably only the third or fourth which had been described.

Professor Simpson also exhibited Bossi's Dilator and demonstrated how it might be employed for the induction of premature labour or forced labour, or in the rapid emptying of the uterus in eclampsia or hæmorrhage.

Dr Berry Hart exhibited specimens illustrating (1) cancer of the cervix removed by vaginal hysterectomy with microscopic specimens; (2) malignant tumour of the ovary with microscopic specimen; and (3) hydrosalpinx.

Dr F. W. N. Haultain showed: (1) An ovarian cyst with large double pyosalpinx which had ruptured into the intestine. The woman had come for advice regarding a tumour. After a short time, however, the tumour had disappeared co-incidently with the discharge of a large quantity of pus from the bowel. The patient had continued well for some time, when Dr Haultain was sent for urgently and found that she was suffering from septic peritonitis. At the operation the tumour was found to be very adherent to the surrounding structures, and foul-smelling pus was exuding from one of the very largely distended Fallopian tubes. (2) A case of early ovarian pregnancy. There was now no doubt but that such an occurrence was possible, and this seemed certainly a case. While removing the tube and ovary from a young woman, a cyst ruptured in the ovary, and both cyst and contents had every appearance of an early gestation. Microscopic sections were to be made through the specimen and so it was exhibited before such was done. (3) The uterus from a lady who had been a chronic invalid and confined to bed for some two years on account of metrorrhagia. She had been curetted on several occasions but the hæmorrhage always returned. The scrapings obtained at the last curetting were exhibited under the microscope and were undoubtedly malignant in character. It was on account of their character that the uterus was removed by vaginal hysterectomy. The interior of the uterus appeared perfectly normal, and there were only one or two small fibroid tumours embedded in the uterine wall. The case was one of adenocarcinoma of the uterus. (4) A double monster. Fusion had taken place between the umbilicus of each as far as the root of the neck. A peculiarity was seen in that the adjoining arms of each were completely fused as far as the hands. During parturition the case was supposed to be one of twins. They presented by the breech and the four legs were drawn down with the intention of decapitating one twin if both could not be delivered alive. During the birth of the bodies it was found that they were

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united, and some trouble was given in searching for a fourth arm before it was recognised that two arms were fused. The heads had been so closely approximated that the adjoining sides of each were facetted.

Dr William Fordyce exhibited a solid ovarian fibroid tumour deeply indented behind by the promontory of the sacrum.

Papers.

Dr D. Berry Hart read his paper "On the Development of the Amnion and Cord in the Human Embryo." The current view as to the origin of the amnion and cord, as in the chick, was discussed, and the difficulties in accepting it were pointed out. It was shown that the amnion did not cover the human cord, and also that practically there was no allantois to moor the embryo to the chorion after it had been separated off by the hypothetical folds. From a consideration of Peters' embryo (the earliest known), and of a similar one in the author's possession, he had come to certain conclusions. Dr Hart traced the development of the amnion from these specimens with the aid of the work of His, Selenka, Graf Spee, Keibel, Mall, Minot, and he advanced the opinion that the germ layers in the human germinal area were inverted, as in the guinea-pig (so-called inversion of the membranes); that the human amniotic cavity was really not formed by folds, but by the formation of an ectodermic plug, with central breaking down, and that it is formed early in development and prior to the development of the cœlom.

Professor A. R. Simpson, Dr Ballantyne, and the President discussed this communication.

The paper "On a Case of Acute Pyelitis in Infancy," by the President, and a "Note on the Symptoms and Treatment of Acute Pyelitis in Infancy," by Dr John Thomson, will be published in the next number of this Journal.

Glasgow Medico-Chirurgical Society

THE fourteenth ordinary meeting was held on April 19, the chair being occupied by Dr W. G. Dun, President.

Dr Middleton showed: (*a*) two infants with great enlargement of the spleen and anæmia; (*b*) an infant with great enlargement of the liver and ascites; (*c*) a child with a cardiac affection, the nature and causation of which were in doubt; (*d*) a child with a nervous affection chiefly characterised by tremors.

Dr Newman gave an account of: (1) a case of movable liver

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and greatly distended gall-bladder relieved by a cholecystotomy; (2) a case of cancerous stricture of the œsophagus in which gastrostomy was successfully performed, there being eventually perforation into the left bronchus, and death from pulmonary complications. The tumour was shown, and sections prepared by Dr Hugh M'Laren.

THE fifteenth (and last) ordinary meeting for the session 1901-1902 was held on Friday, May 2.

Dr Parker and Dr J. W. Nicol showed a case of multiple hypertrophy of the sebaceous glands of the face in a congenital epileptic.

Dr W. G. Dun (the President) and Dr A. W. Russell reported a case of contracted pelvis and pregnancy, in which the latter had performed symphysiotomy successfully at full time. The patient was a ii-para of about thirty years. The first child died before birth, and was extracted by forceps. The true conjugate was estimated to be $2\frac{3}{4}$ inches. When Dr Russell interfered labour had begun, but the bag was unruptured. The symphysis was divided by a probe-pointed bistoury, and a gap of 6 cm. (rather over $2\frac{1}{4}$ inches) was obtained. It was calculated that a gain to the conjugate of about $\frac{2}{5}$ inch was thus acquired. Delivery with forceps was difficult, but a full-time live male child, weighing $8\frac{1}{4}$ lbs., was extracted. There was a vaginal tear. Recovery was good.

Dr Geo. Edington showed a cyst due to persistence of the thyro-glossal duct, while under the microscope sections of the same (prepared by Dr Teacher) were exhibited.

Glasgow Obstetrical and Gynæcological Society

THE ninth ordinary meeting was held on April 23—Dr Jardine, President, in the chair.

Dr Edgar showed a specimen of *fœtus papyraceous*, being one of twins, born that day, one month after the normal date of labour. The other child, a male, was alive, and was very large.

Dr A. W. Russell showed a tube he had devised for rectal douching.

Dr A. W. Russell read accounts of two cases of fungating cancer of the cervix treated by vaginal hysterectomy. (1) Mrs M'G., æt. 33, vii-para, who had suffered from irregular bleeding and offensive yellow discharge. A large fungating cancer filled the vaginal vault, while the uterus was small and

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mobile. Hysterectomy was performed in July 1901, and the recovery was good. She is still well and healthy. (2) Mrs C., vi-para, æt. 57, complained especially of irregular hæmorrhages after the menopause. Hysterectomy was performed in September 1901, and the patient was dismissed a month later. She is still well and fit for any ordinary exertion. In doubtful cases, the writer said, it was always a good thing to curette and apply pure formalin, which certainly arrested the disease for a time.

Dr Edgar spoke on the importance of early operation, and Dr Russell replied.

The same speaker also showed a uterus (pregnant) removed by abdominal hysterectomy for cancer of the cervix. The patient was a i-para, aged 46 years. She was seven months pregnant, and sought advice for bleeding and offensive discharge. The cervix was the seat of a dense carcinomatous growth. Operation was decided on, as the hæmorrhages became very serious. Abdominal hysterectomy was performed, and completed successfully, but the patient never rallied well, probably on account of the previous severe hæmorrhages, and died twenty-six hours later. Dr Edgar said that it should be easier to diagnose the malignant condition in the gravid uterus on account of the greater size of the cervix; he also said he preferred the vaginal route.

Dr Stark examined the first patient shown (Mrs M'G.) and reported that the vagina was quite free from recurrence, but that there was a small tender nodule in the right side of the pelvis.

Dr Jardine read notes of a case of chondro-sarcoma of the pelvis. The patient was Mrs H., æt. 29, i-para and seven months pregnant. She complained of great pain and of swelling of the right leg and vulva. The abdominal wall was œdematous and the superficial veins enlarged. A large firm mass was felt in the right iliac region. Diagnosis of an osteo-sarcoma of the right side of the pelvis was made and Cæsarean section done nine days later. The child was dead. On section, an enormous mass was found filling the whole of the pelvis and growing from its right side. It reached superiorly as high as the navel and mesially beyond the middle line, and was quite irremovable. The patient sank and died twenty-four hours later. The *post-mortem* showed the presence of a huge growth involving the whole of the right side of the pelvis, growing right through and inferiorly projecting into the thigh below the pubic arch. Microscopically it was a chondro-sarcoma.

Dr Edgar read a note of a case of large pyo-nephrosis which ruptured into the peritoneal cavity. The patient was admitted into the Samaritan Hospital in January 1902 with a large

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fluctuating tumour in front of the right kidney and behind the ascending colon. This ruptured spontaneously and the patient became desperately ill. The abdomen was opened and a large quantity of pus washed out and the kidney drained posteriorly. Recovery, though slow, was very good.

A second case reported was that of cancer of the rectum in a woman, who suffered from a papillomatous mass nearly encircling the bowel at the upper margin of the anus. It was excised, healthy bowel stitched to the anus, and the patient is now very well, with fair control over the sphincter.

Glasgow Southern Medical Society

THE sixteenth ordinary meeting of the Society was held on April 17—Dr Stewart, President, in the chair. Dr Edington exhibited a case of coxa vara, and spoke on it. He discussed the diagnosis between this condition and rickets and hip-joint disease; drew attention to the waddling gait and to the pain (which went with rest), and pointed out that, while flexion was free, adduction was limited. The pathology had not been fully worked out yet, but the essential change was probably a softening of the head of the femur. For young patients, the application of plaster-of-Paris was probably best; later on, osteotomy might be tried.

THE seventeenth ordinary meeting was held on May 1, the President in the chair. Dr Carstairs Douglas read a paper on "Life Assurance Examination, and the Relations of the Medical Examiner to the Company." An abstract of this paper will appear in a future number of the *Journal*. A considerable amount of discussion followed, in which the President, Dr Wallace Anderson, and others took part, and Dr Douglas replied.

Aberdeen Medico-Chirurgical Society

THE last meeting of the session was held on May 1st—Dr D. W. Finlay, President, in the chair.

The evening was devoted to the demonstration of pathological specimens, and the following were shown:—

Dr G. M. Duncan.—Jar preparations and slides of *avian tuberculosis*, blood films of *filaria nocturna*, blood films from cases of *leucocythæmia*.

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Dr D. W. Finlay.—*Cancer of stomach*, with microscopic section.

Dr T. Fraser.—Slides of *uterine casts.*

Dr Lister.—Slides of infiltrating *cancer of liver.*

Dr Low.—*Stereoscopic photographs.*

Dr A. W. Mackintosh and Dr Duncan.—Cultures, etc., of human and bovine *actinomycosis* and of *madura foot.*

Dr Marnoch.—Specimens of *intussusception*, *ovarian tumour and cyst*, *hydronephrotic cyst*, *renal calculi*, specimen of *perforated gastric ulcer*, *breast tumour*, various *appendices*, skiagram of *Gritti's operation.*

Dr Murray, for Dr J. Scott Riddell.—*Gallstones* from common duct, *tumour of omentum*, *appendix and concretions*, *cancer of stomach*, *parovarian cyst and cystic ovary*, *carcinoma of testis*, *lymphoma of neck*, *tubercular arthritis* (knee), skiagrams of a *tubercular focus in trochanter*, and of *pararrachement of os calcis by tendo achillis*, etc.

Editorial Notes and News

The Bangour Asylum. THE Members of the Edinburgh District Lunacy Board cannot be congratulated on their foresight or their business capacity, judging by the defects, the delays, and the endless series of vicissitudes of their scheme for building a new asylum for the insane at Bangour. For the apparently reckless manner in which they were prepared to spend the public money no censure can be too strong, and the disclosures in a recent report made by a Sub-Committee of the extravagances connected with the scheme have aroused strong feelings in Edinburgh. We hope that retrenchment and a wise economy are now assured.

We cannot say we are convinced that the first action of the District Lunacy Board—that of selecting a site so far from town, far from the homes of the patients and from their friends and relatives—was a wise one, though it must be admitted that the choice of a site for a very special object like an asylum is not an easy matter. Be that as it may, if economy in the beginning sent them so far afield, it has now been proved to the hilt that difficulty of access, with the necessity for a special railway line, and deficient water supply, have transformed a cheap purchase of land into an expensive site for an asylum. That the asylum is to be built on the southern slopes of a hill, necessitating underbuilding and digging out, is not altogether a

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disadvantage, as anyone can discover who passes from the old Asylum at Morningside, which is built on the flat, to Craig House, with its fine open, but hilly situation.

With the Medical Ideas involved in the construction of the new asylum, those who have had an opportunity of studying them, and are in a position to judge, express their approval. Indeed, it is probable that in no modern asylum have the details for the medical treatment and welfare of the patients been more carefully thought out, and in many particulars these ideas have already been recognised as an advance, and have directly inspired the Lunacy Boards of other districts. Speaking for the Medical Profession, we desire the new Edinburgh Asylum in its medical arrangements to be worthy of the Town and its Medical School. This object, however, is compatible with a due regard to economy, and the Lunacy Board and their architect, upon whom devolves the task of embodying these medical ideas in stone and lime, have signally failed to grasp this very important point.

The talented architect whom the Lunacy Board appointed to design the new asylum was selected by open competition, and the superiority of his competitive design was generally acknowledged by the members of the Psychological Section of the British Medical Association, which was holding its annual meeting at the time in Edinburgh. While from its artistic side his work cannot be found fault with, we hold the opinion strongly that the expensive nature of his designs absolutely vetoes them for public and semi-charitable purposes.

The present position of affairs is that Mr Hine, a London architect of great experience in asylum construction, is to examine the plans, in conjunction with the architect of the Lunacy Board, and is to report if the estimated cost of these may not be reduced. The cost must be substantially reduced; economy must be the order of the day; and then if, in architectural extravagance the Bangour Asylum will not vie with some other institutions, we hope that the excellence of its medical and administrative arrangements may bring renown to Edinburgh.

THE Bangour difficulty has cast its shadow over Sir John Sibbald's scheme for a Psychiatric Clinique in the Infirmary. As we said some time back, it is when one gets to details that the difficulties of such schemes become apparent, and the clinique is no nearer establishment than it was some months

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ago. A suggestion put forward by Dr Clouston, in a letter to the *Scotsman*, that the Bangour Asylum Scheme should be completed by the establishment nearer Edinburgh of a hospital for the more recent and acute cases, seems to some a possible way out of the difficulty.

The feeling in the minds of several is that there are many disadvantages attached to the treatment of mental cases in an infirmary, and curiously in Paris, where mental cases are at present treated in some general hospitals, there is evidence of a feeling that this should be discontinued.

The managers of the Royal Infirmary have referred the question to the Staff for opinion, and the subject is receiving careful consideration.

Bacteriological Diagnosis.

THE latest, for one cannot say yet the last, act in what Dr Gibson felicitously called the "Gilbertian" proceedings, is the issue of the following letter to all the practitioners of Edinburgh :—

ROYAL COLLEGE OF PHYSICIANS,
EDINBURGH, *8th May* 1902.

DEAR SIR,—I am directed to inform you that, in consequence of the decision of the Town Council to transfer to the Usher Institute the Reporting on Morbid Products received by the Medical Officer of Health from Practitioners in the city, the College has resolved to cease to issue Reports on such Products received through the Medical Officer of Health after the 15th inst.

As it is the wish of the College to place the resources of the Laboratory freely at the service of the Medical profession, in the interest of the citizens, the College has determined to revert to the earlier arrangement, and has instructed the Superintendent of the Laboratory to receive Morbid Products directly from Medical Practitioners in the city, and to report thereon without fee.

I am further directed to express the gratification afforded to the College by the many expressions of satisfaction with, and appreciation of, the Reporting Work carried out by the College, which the recent discussions have evoked.—I am, dear Sir, yours faithfully,

R. W. PHILIP, *Secretary.*

It is the feeling of some of the leaders of the College of Physicians that as the college owes much to the medical profession, it should do all in its power to repay it.

The Professor of Public Health delivered his inaugural lecture the other day, but the Dean of the Medical Faculty

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explained that the Usher Institute was not yet completed, so that all the city has done by its hasty action is to deprive the Medical Officer of Health of information which must be most useful to him. The practitioners of Edinburgh will, under the new arrangement, be able to obtain reports on their doubtful cases, of the same satisfactory nature as they have in the past.

Laboratory Demonstrations.

DURING May the Superintendent and workers in the Laboratory held a series of three demonstrations of the work going on there, of which a fuller note is published elsewhere. These demonstrations give the practitioner the opportunity of getting an intelligent grasp of modern experimental work, and are likely to prove useful.

Western Infirmary, Glasgow.

IN April the managers of the Western Infirmary made the following appointments:—Dr T. Kennedy Dalziel to be Full Surgeon; Dr R. Barclay Ness to be Assistant Physician; Dr Campbell McClure and Dr Robt. Fullerton to be extra Dispensary Physicians in place of Dr Cowan and Dr Webster promoted to be ordinary Dispensary Physicians. Dr Dalziel's appointment leaves vacant an assistant-surgeoncy, for which it is expected that the present dispensary surgeons—Drs Geo. B. Buchanan, Geo. H. Edington and Morton—will all be candidates.

Chair of Surgery in Anderson's College.

FOLLOWING close upon Dr Dalziel's appointment as Full Surgeon to the Western, comes news of his resignation of the Chair of Surgery in Anderson's College which he has held since 1895, when he succeeded Dr Jas. Dunlop. There will be no lack of candidates for this—one of the best extra-mural chairs in Glasgow, which, moreover, from the proximity of the College to the Western Infirmary and the University, is likely under the Carnegie regime to become still more attractive. As possible applicants, Dr J. H. Nicoll, Mr Parry, Dr Robt. Kennedy, Dr Grant Andrew (the present assistant) and others are mentioned.

MR ERNEST THOMSON, M.A., M.D., has been appointed surgeon to the Glasgow Eye Infirmary.

County M. O. H. in the Highlands.

IN the list of questions in the House of Commons on May 9th appeared:—

"*Question.*—Mr Harmsworth: To ask the Lord Advocate whether he is aware that on 8th March last the County Council of Caithness appointed a duly qualified

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medical practitioner to be medical officer of health for the county, and that this practitioner had not yet entered upon his duties, consequent on delay on the part of the Local Government Board in intimating whether he will be allowed to have consulting practice; and whether he can state when the decision of the Department will be communicated to the authorities in Caithness? (8th May.)

"*Answer.*—On the 12th March the Local Government Board were informed that the County Council of Caithness had appointed a county medical officer with permission to engage in consulting practice. The Local Government Board did not interfere with the appointment, nor hinder the new officer entering on his duties. It was necessary, however, to consider whether the grant in aid of the cost of medical officers should be payable to the County Council in respect of this appointment. The rule is that where the medical officer engages in consulting practice the grant is not given, unless the Secretary for Scotland is satisfied that there are exceptional circumstances justifying this arrangement. The necessity of considering these circumstances in this case caused some delay, but the County Council have now been informed that the grant will not be given. (8th May. Scottish Office.)"

The matter is a somewhat burning question in certain counties. In the more closely populated counties there is absolutely no defence for the claim that the medical officer of health should be allowed consulting practice. But in the sparsely populated islands where medical men are often thirty miles from their neighbours, there is obviously room for a little latitude.

The chief difficulty appears to be the definition of term "consulting practice," and the extremely liberal interpretation put upon it in some quarters. If in these thinly populated districts the medical officer of health were permitted only to see patients along with another medical man, possibly no great harm might result. The salaries are ridiculously small and the mere getting from place to place involves a great deal of hardship in travelling.

But we are glad to see that the County Councils are evidently to get no encouragement in their economical desire to get a cheap medical officer by allowing him to eke out an inadequate income by doing outside work.

Sanatoria for Consumption.

THE Ontario Legislature has passed an Act amending its Public Health Act, which will prevent the opening of private hospitals for consumption without the permission of the Local Board of

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Health. The Act does not apply to public general hospitals, in which patients suffering from other diseases as well as from consumption are received, nor does it interfere with the establishment of sanatoria under municipal auspices.

Royal College of Surgeons, Edinburgh

AT a meeting of the College, held on 16th inst., the following gentlemen, having passed the necessary examinations, were admitted Fellows of the College:—William John Barclay, M.B., Ch.B., Edinburgh; Frederick William Collinson, M.D., M.R.C.S. Eng., Preston; David Ewart, M.B., Ch.B., Edinburgh; William Ewart, M.B., Ch.B., Edinburgh; Charles Forsyth, M.B., Ch.B., Edinburgh; Henry Albert John Gidney, L.S.A., India; John Holroyde, L.S.A., M.R.C.S. Eng., Chatham; John Jeffrey, M.B., Ch.B., Edinburgh; Thomas Davy Luke, M.B., Ch.B., Edinburgh; Charles Henry Leet Palk, M.B., C.M., India; and Charles Henry James Watson, M.B., Ch.B., Edinburgh.

At the same meeting the medal and set of books, forming the "Bathgate Memorial Prize," presented to the College by Colonel William Lorimer Bathgate, in memory of his late father, William M'Phune Bathgate, Fellow of the College, was awarded to Miss Charlotte Rose Greenfield, 7 Heriot Row, Edinburgh, for the highest marks obtained in competitive examination in materia medica and therapeutics.

Recent Literature

CRITICAL SUMMARIES AND ABSTRACTS

MEDICINE

NEUROLOGY

By ASHLEY W. MACKINTOSH, M.A., M.D.,
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Operative Interference in Spinal Fracture.—An able and suggestive paper, dealing with this much-debated question, was read by G. L. Walton before the New York Neurological Society, and gave rise to an interesting discussion in which many well-known American neurologists took part (*The Journal of Nervous and Mental Disease*, Jan. 1902, pp. 1 and 37).

Walton first gives a review of the *symptomatology* of spinal

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fracture, illustrating his remarks by several good personal observations. We shall note only one or two points in this connection. The question is not yet quite decided whether a complete transverse lesion of the cord always causes a total flaccid paralysis below, with anæsthesia of abrupt demarcation and loss of reflexes: Walton believes that these symptoms, if persistent, do point to complete transverse lesion, but he lays great stress on the fact that the onset of such symptoms does not preclude a certain degree at least of restoration of function. He quotes recorded cases, both operative and non-operative, in proof of this, and one of his own cases (Case III.) illustrates the same fact. He holds, therefore, that we cannot diagnose a complete ("and incurable") transverse lesion otherwise than by the persistence of the symptoms named. This has an important bearing on his views regarding the advisability of early operative interference in spinal fracture. Reference may be made to his remarks on the help in diagnosis to be got from local signs in the spine: tracings are given of normal spines to show the great extent of physiological irregularities which are probably often mistaken for signs of serious injury. This point seems worthy of attention.

As regards *prognosis*, this is, of course, stated to be grave, especially in cervical cases. Statistics are quoted which show a mortality of about 80 per cent. in cases without operation. Other statistics are given which show a considerably smaller mortality in operative cases (Lloyd 50 per cent., Chipault 40 per cent., Thorburn 57 per cent.), but it is rightly pointed out that these last statistics are open to the objection that many unsuccessful cases are unpublished. Walton has collected from various sources a complete series of 34 cases operated on, with 24 deaths, thus showing a mortality of slightly over 70 per cent. The question, "Is the prognosis of spinal fracture in general better with operation?" receives no direct answer: he believes that "we are perhaps not yet in a position to make a final comparison between the results of operative and non-operative treatment," "what we need now is more facts"; but, with regard to his personal experience, "the course of such operative cases as have come under my observation has been on the whole more favourable than my previous experience and study of the literature would have led me to expect without operation."

With regard to the *technique of the operation*, he thinks that the dura should be opened freely, that it need not be sutured, and that drainage is unnecessary.

The main question, however, discussed in the paper before us, is "whether it is not wise to make early operation the common custom" in spinal fracture. Very different views are held as to

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the indications for or against operation, and also as to the best time for operation. It may, we think, be said that most authorities reject the early operation, because one cannot say for some time with any degree of certainty how far the symptoms are the result of actual compression (which operation might relieve) or of some such condition as simple concussion or hæmorrhage (for which operation would be unnecessary). Walton strongly advocates early operation—some hours, or, at most, a few days after the injury—because "early operation will not only accomplish all that late operation will do, but it will be performed to better advantage before reparative processes with adhesion and callus have appeared"; further, "a delay of hours is not important, but that of days may be, since degenerative processes set in early, according to Lloyd on the fourth day."

As regards indications for operation, Walton argues strongly for making operation *the rule* in spinal fracture. "Instead of selecting the occasional case for operation, we should rather select the occasional case in which it is contra-indicated (the patient with great displacement of vertebræ, the patient with high and rising temperature, the patient plainly moribund, the patient still under profound shock)." It is generally held that, in complete transverse lesion of the cord, operation can do no good and should therefore not be undertaken; while it is specially indicated in cases in which the bony lesion is limited to the arches (Thorburn, Goldscheider, etc.). Walton dissents from these views, because of the difficulties in the way of a diagnosis of a complete crush of the cord at the outset and of the extent of the bony lesion, and he believes that we may do harm by pausing too long over a diagnosis. His argument for making operation the rule is based on these propositions:—the prognosis without operation is grave; while the results of operation are not brilliant, they are sufficiently encouraging to warrant us in making the practice more general; the operation at the worst does not materially endanger life nor affect unfavourably the course of the case; we have no infallible guide as to the extent of the lesion (whether the cord is hopelessly crushed, whether there is permanent compression, etc.). As regards the extent of the beneficial results to be expected from operation, he does not make any great claims—his views with regard to prognosis, already considered, clearly show this; but he believes that the operation "may at least be expected to lessen pain, to reveal the nature of the lesion . . . and to place the cord in the best position for restoration of its function when such restoration is possible," and "may sometimes save a patient from death or from helpless invalidism of most distressing character."

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In considering these views as expressed by Walton, one must at once admit the great difficulties encountered in attempting to arrive at a correct conclusion as to the extent of the lesion and the chances of giving relief by operation in many cases of spinal fracture. Before, however, accepting Walton's view, we must keep clearly in mind these generally recognised facts:— (1) In many cases of crush of the cord, in all probability the majority of cases, there is no permanent bony compression of the cord, as the displaced bones have fallen back into place; in these cases, therefore, operation is unnecessary. (2) In some cases, probably only comparatively few, where compression is present, it is not from bone but from hæmorrhage; for these also operation is unnecessary. (3) In the numerous cases of complete transverse division of the cord, operation can be of no avail. It follows, therefore, that the only cases for which operation *can* do good are cases of incomplete lesion of the cord with permanent bony compression. If, then, operation is made the rule, as Walton advocates, a large number of operations, the great majority we believe, will be done in cases in which operation is either unnecessary or can be of no avail. The severe nature of the operation must also not be forgotten, for, although it may involve only a small danger to life, it is a severe operation and is not to be lightly undertaken, especially in view of the frequent occurrence of a local myelitis at the seat of fracture even where no permanent compression of the cord exists. Further, the results of operation in the past must still be regarded as distinctly discouraging, although, happily, there have been some notable exceptions to this statement. In view of these facts, while recognising the strength of Walton's position, we think that more certainty of diagnosis and greater prospect of relief may well be demanded in order to justify such free recourse to operative interference as he advocates. As regards the time for operation, the advantages of waiting for some time—say, several weeks—would seem, in the great majority of cases, to outweigh its disadvantages. One will then at least be able to eliminate many cases for which operation is either unnecessary or useless: the persistence of symptoms of complete transverse lesion of the cord will contra-indicate operation as of no avail, while the spontaneous clearing up of symptoms will save other cases from needless interference.

While we cannot agree with all the views put forward by Walton, and generally accepted by those who took part in the discussion, we feel that his contribution to a difficult subject is a valuable one, and that it should, above all, act as an incentive to greater diligence in diagnosis.

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Professor James Stewart (*The Montreal Medical Journal*, January 1902, p. 1) records a most interesting and instructive case of **Subcortical Glioma of the lower part of the Left Ascending Frontal Convolution,** successfully removed; the case is of such special interest as a contribution to the study of the nature of speech disturbance arising from lesions in this situation that we give the main facts of the case in some detail.

The patient, a man of 37, quite healthy and with no specific history, began to suffer in August 1900 from sudden attacks of absolute loss of speech, lasting about thirty minutes; during the attacks there was no trace of mental impairment, he could read, write, understand what was said to him, and he knew what he desired to say but he was unable to utter a sound. Later, these attacks were accompanied by a slight feeling of deadness or numbness in the index and middle fingers of the right hand. Objective examination of the nervous system on December 6th, 1900, gave entirely negative results. Early in January 1901, he began to suffer from headache, frontal and vertical, often severe at night; vomiting occurred at rare intervals, his sight began to fail and attacks of clonic spasm of the right lower face appeared, lasting for a few seconds, and accompanied by numbness and weakness of the right arm. Examination on January 25th showed the following condition:—speech-defect of the nature of defective articulation (dysarthria), especially of labials; distinct weakness of the right arm, very slight weakness of the right leg; no objective sensory defect, but a more or less constant feeling of deadness or numbness in the right forearm and hand; weakness of the lower part of the right side of the face, and intermittent, clonic spasm of the muscles of the right lower face, lasting for a few seconds or minutes; constant tremor in the right side of the tongue, which deviated slightly to the right when protruded; both knee jerks slightly exaggerated, right rather more so than left; tenderness of the left side of the cranium on percussion; well marked double optic neuritis; pupils and ocular movements normal.

Under observation, there was marked progression of the symptoms up to the date of operation (March 9th). The spasms of the muscles of the right lower face recurred at irregular intervals. The paralysis of the right lower face and of the right side of the tongue increased and was always worse after a facial spasm; the paresis of the right hand and arm, previously observed after the facial spasms, became less pronounced. Subjective sensory disturbances (numbness) were practically confined to the right hand and right side of face and tongue; there was no objective defect of sensation anywhere except on the right half of the tongue, where the sense of touch

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was distinctly defective, while painful and thermic sensations were normal. Optic neuritis gradually increased, especially on the left side, with corresponding diminution of vision, and latterly there was more or less constant headache, often severe at night, chiefly vertical and often extending down the left side of the head to the left shoulder and arm. As regards the speech defect, the attacks of mutism were no longer noted but there was progressive deterioration of the power of articulation up to a practically complete anarthria—no single letter or numeral could be articulated so as to be understood, although he made persistent efforts at speaking. Up to the end he was able to read and there was no trace of word-deafness or word-blindness or object-blindness; occasionally he had some difficulty, never pronounced, in recalling certain names. His power of writing also markedly diminished (dysgraphia); he could write words of one syllable correctly but with an effort, and words of two or more syllables were very rarely written correctly—he managed the first syllable fairly well but stumbled over the others; his efforts at copying were no better.

The diagnosis arrived at was an intracranial tumour, probably gliomatous, on the left side of the cerebrum at the lower part of the ascending frontal convolution, beneath but close to the cortex. This was exactly confirmed at the operation, performed by Professor Bell, when a gliomatous growth measuring one inch by a half or three-quarters inch was easily found at the situation named and readily removed; it lay immediately beneath the grey matter of the lower part of the left ascending frontal convolution.

For several days after the operation the defect in articulation, the facio-lingual paralysis, the right facial spasms and the sensory disturbances were more pronounced; then all the symptoms began to improve. The facial spasms ceased after the tenth day, the headaches somewhat sooner; the motor paralysis and sensory disturbances entirely disappeared; there was no appreciable diminution in the optic neuritis; when he left the hospital on the twenty-eighth day after operation, writing and articulation had improved so much that he could readily write words of several syllables, and his articulation was almost normal, except that he spoke slowly and had to make a distinct effort to articulate words of more than one syllable, especially labials.

It is well known that disturbance of speech, more or less permanent and severe, may result from lesions affecting any part of the course of the fibres which descend from the third left frontal convolution (Broca's centre) to the speech centres in the medulla. If the lesion is at some distance from the cortex, *e.g.* in the internal capsule, as in so many cases of hemiplegia, the

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disturbance of speech usually soon passes away; while if the lesion is just beneath the cortex there is permanent and great affection of speech. The usual explanation of this difference is that, when the lesion is about the internal capsule, the commissural fibres which connect the left and right third frontal convolutions through the corpus callosum are intact, and the speech impulses, starting from Broca's centre, can pass through these fibres to the corresponding centre on the right side, and thence down through the right internal capsule to the speech centres in the medulla; whereas, if the lesion is just beneath the cortex, these commissural fibres are interrupted, as well as those passing down to the internal capsule, and the speech defect is therefore permanent (except in so far as the right hemisphere can compensate by taking on the function of speech). Thus, in a case of subcortical disease, where there is marked and permanent disturbance of speech, the presumption is in favour of a situation close to the cortex. This was true of Stewart's case.

With regard to the *nature* of the speech-defect in those cases of subcortical lesions, the usual teaching is that it is motor aphasia. It is not so well known as it should be that Bastian and others maintain that, in all such cases, the essential characters of the speech-defect are exactly like those seen in lesions of the bulbar speech-centres, viz., *not* aphasia, but a disturbance of articulation, indistinguishable clinically from the disturbance of speech due to bulbar disease, and which may vary from mere thickness of articulation to actual loss of speech or dumbness. Bastian calls such speech-defect from subcortical lesion *aphemia*, and states that it can be distinguished from aphasia, due to destruction of the third left frontal convolution, by the fact that in aphemia the patient's utterance is consistently and uniformly bad, but he will always at once make an attempt, when bidden, to pronounce some simple word or syllable (however poor the attempt may be); the typical aphasic patient, on the other hand, is unable to make any such attempt, but there is often a constant utterance of some words or phrases with perfect articulation. Stewart's case strongly confirms Bastian's view, inasmuch as the speech disturbance had practically no aphasic element, but was of the nature of a profound defect of articulation (anarthria). Such cases, which are by no means common, tend to show that more stress might well be laid on the difference in the character of the speech-defect in the differential diagnosis of a cortical and subcortical lesion in the region of Broca's centre.

Charles Phelps (*The American Journal of the Medical Sciences*, April 1902, p. 563) has an interesting paper on the **Localisa-**

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tion of the Mental Faculties in the Cerebrum. Physiologists and pathologists alike have differed in their interpretation of the phenomena which they have observed bearing on this subject. Does the control of the mental faculties reside in some distinct region of the brain, or do they constitute a function of the brain as a whole? Those who argue for their localisation in special higher centres agree in placing these in the frontal lobes, and more especially in the pre-frontal region. Phelps goes further. From the personal observation and careful records of no fewer than 800 cases of intracranial traumatism, of which more than 300 were subjected to either operative or *post-mortem* inspection, he has been able to arrive at the following important generalisations:—(1) In every instance but two—and these were exceptional in certain respects—laceration involving the left frontal lobe was attended by default of intellectual control, and the lesion was usually, if not always, of the pre-frontal region. (2) In every instance in which laceration was confined to the right frontal lobe, the mental faculties were unaffected, except in as far as they were obscured by stupor or delirium occasioned by coincident general lesion. There were no instances in which a laceration of any other cerebral region was attended by characteristic mental changes. The conclusion, therefore, drawn from his extensive series of cases, is that *the control of the mental faculties is located in the left pre-frontal region, to the exclusion of the right lobe.* Full notes are given of 18 personal cases of frontal lesions, verified either by necropsy or operation, and he finds confirmation of the conclusion just stated in cases recorded by other authors, which serve to show that, while left frontal lesions are attended by great mental disturbance (as in the well-known "crow-bar" case), there may be extensive destruction of the right frontal lobe without any such disturbance.

The extent of the lesion rather than its situation in the prefrontal region seemed to be the factor which determined the amount and character of the mental derangement. Thus simple compression or contusion of the left lobe only exceptionally produced definite intellectual disturbance. Superficial laceration was specially characterised by mental aberration (perverted memory, incoherence, delusions, etc.) rather than actual loss of mental power (apathy, stupor, sluggishness, etc.), while the latter was the chief feature observed in subcortical disintegration or in deep or extensive laceration of the cortex. Thus the rule established was that "the deeper the laceration (and therefore the more destructive the injury), the more mental default preponderated over mental aberration."

The Early Diagnosis of Lues Cerebri is the subject of a

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paper by Professor Tschish (*The Journal of Mental Pathology*, vol. i. No. 2, p. 65). Lues cerebri is curable, but only if treated early—and this pre-supposes early diagnosis—and before damage has been done to the cerebral tissues. A knowledge of the signs of incipient brain syphilis is therefore all-important, and any contribution to this knowledge deserves attention.

Amongst the early symptoms, on which emphasis is laid by Tschish, are *headache* and *insomnia*: in the majority of cases—but *not* all—dull, diffuse headaches are characteristic, differing from the neurasthenic headache by being worse at night; in a minority of cases, insomnia occurs of a very obstinate character, resisting heroic doses of bromide, but generally relieved by potassium iodide, sometimes very quickly. He lays comparatively little stress on pupillary symptoms (inequality, reflexes) or on changes in the tendon-reflexes, both because their significance is not unequivocal, and because, in any case, they are not signs of *incipient* syphilis, but point to the existence of grave changes already present in the cerebral tissues, which give little hope of cure from treatment. From a consideration of such symptoms and signs, he concludes that an early diagnosis of lues cerebri is very difficult or almost impossible—the symptoms, claimed by some to be diagnostic, being either inconstant in appearance during the early stages or too late of appearing.

There is one sign, however, on which he claims that great stress should be laid in the diagnosis of incipient cerebral syphilis—viz., arterio-sclerotic changes in the carotid arteries and their branches. Most of these vessels are inaccessible to direct observation, but the temporal artery is not. He finds that the first signs of the sclerosis appear in the anterior temporal artery, in the part running through the *middle* region of the temple; the affection then spreads backwards into the region covered by the hair. The changes visible in the artery are, thickening—best seen by examining the part from the profile—and zig-zag curving of its course. In the beginning of the disease, the left side is most often affected by the arterio-sclerosis; thus, in twenty-two cases the sclerosis was marked on the left side only, and in two on the right; and in all these cases "the arterio-sclerosis was my main leading sign in the diagnosis, as all the other symptoms were scarcely present." Since he began to pay attention to this sign he has not found one case of cerebral syphilis that did not present it, and he regards this arterio-sclerosis as an absolute sign of cerebral syphilis, because it disappears within the course of a few weeks under specific treatment.

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Kalmár and Bagarus (*Ungarische Medizinische Presse*, 28th February 1902, page 130) record the results obtained by them in the **Treatment of Epilepsy** by the method of Toulouse and Richet. This method consists in a combination of the bromide treatment with a diet free from salt; it is claimed that, with such a diet, the influence of the bromide is both more energetic and more permanent. Kalmár and Bagarus subjected fifteen epileptics to this treatment, and the result was that in seven the attacks diminished in frequency, in six they were more frequent than before the treatment was commenced, and two died. Even in those cases which showed a diminished frequency of the attacks, the diminution was not greater than was noted in the same cases at some time or other when treated with bromide and ordinary diet and watched over a considerable length of time. Their conclusion from these cases is, therefore, that this line of treatment has no special efficacy, and it has this disadvantage that patients object to the continuance of the salt-free diet for any length of time. They find, however, that such a diet does undoubtedly increase the effect of the bromide on the nervous system; but there is danger in this, as severe toxic effects of the drug appear more readily. This was shown by the fatal results in two of their cases, in both of which heart-failure occurred despite all treatment. The question arises whether the result was due to bromide poisoning as such, or to the removal of salt from the diet; but, in any case, they believe that this method of treatment is not one to be recommended, and is decidedly dangerous.

E. H. Sickler (*The Medical Age*, January 25, 1902) reports favourably of the use of **Heroin Hydrochloride** for the relief of *pain* in neuralgic conditions (*e.g.* sciatica, intercostal neuralgia, etc.). He has found it as efficient an analgesic as morphine and he claims that it has the great advantage of obviating any risk of establishing a drug habit; it has no inhibiting effect on the bowel movements, and is not followed by the headache or nausea so often produced by morphine. He gives it in $\frac{1}{12}$ grain dose hypodermically.

OPHTHALMOLOGY

By J. V. PATERSON, M.A., M.B., F.R.C.S.Ed.,
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Correction of Myopia.—The very important practical question as to the proper correcting lenses to be worn by myopes is again under discussion in the journals.

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On the Continent the systematic under-correction of myopes for the sake of avoiding every possibility of accommodative strain appears to have been much more rigorously carried out than in this country. At present, however, there are signs of the spread of a revolt against this usage, and at the Heidelberg Congress Pfalz came boldly forward as an advocate of full correction. Hess's recently published and widely accepted views regarding the phenomena of accommodation, have doubtless done much to prepare the way for this change of attitude. In the *Klinische Monatsblätter f. Augenheilkunde*, March 1902, there are no less than three articles,[1] all of them, with more or less reservation, in favour of the "full correction" system. The opinions are based partly on theoretical grounds and partly on statistical evidence. The chief objection to the latter seems to be the defective separation of the different clinical types of myopia. The greatly-lessened liability to progressive increase of myopia after the age of about seventeen years is dwelt upon. From seven to fifteen appears to be the most dangerous age. The supposed ill-effects of near work are not by any means always in evidence, while the fact that marked increase of myopia was noted in several patients who used only one eye, raises doubts as to convergence being an important cause. The authors recognise the great advantage of full correction in early childhood, the child being thus placed on more equal terms with its fellows both at work and play. In adults the cases require more careful individual study. The visual acuteness, the accommodation, the power of convergence, and the presence or absence of binocular fusion, as well as the occupation and the wishes of the patient, are all factors which require to be taken into account in the treatment. Many ophthalmic surgeons in this country regularly prescribe as full a correction in myopia as is comfortable for the patient, maintaining that the prejudice against full correction is quite unfounded. With this we entirely agree; but, as indicated above, many cases are not suitable for full correction, and the best correction is usually the one which the patient approves.

Treatment of Simple Glaucoma.—The very existence of a constantly recurring conflict of opinion regarding the best

[1] *Klinische Monatsbl. für Augenheilkunde*, March 1902—
P. 179. Dr P. Schreiber, Magdeburg. "Wie korrigiert man die Kurzsichtigkeit am zweckmässigsten?"
P. 191. Dr A. Roscher, Breslau. "Myopie-Statistik, ein Beitrag zur Frage der Vollkorrektion.
P. 200. Dr M. Meyerhof, Bromberg. "Uber die Zunahme höherer Kurzsichtigkeit bei Unterkorrektion für die Nähe.

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treatment of this disease is sufficient proof that no line of treatment is really satisfactory. The cry is still for statistics to show percentages of good and bad results, under different therapeutic methods applied to large numbers of cases. Observers unfortunately vary much in their classification of cases of glaucoma, and even to some extent in their ideas as to how simple glaucoma is to be diagnosed. In this way the value of therapeutic statistics will, we venture to think, be greatly lessened. Professor Haab of Zürich, in a new work on glaucoma (reviewed in the *Kl. Monatsblätter f. Augenheilk.*, February 1902), lays stress on the degenerative changes in the circulatory system accompanying glaucoma. Professor Haab is an advocate of iridectomy and sclerotomy, the latter especially in the chronic glaucoma of children. By the use of multiple sclerotomies he appears to have obtained unusually good results in these cases. In making the section above he fixes the upper scleral margin with the forceps, to ensure greater precision. Sometimes he incises the corneo-iridic angle with the point of the knife.

There has not recently been much reference made to resection of the cervical sympathetic in glaucoma. Prof. Axenfeld and M. Ziehe have lately published an account of five sympathectomies followed by very satisfactory results. They also discuss sixty-nine cases collected from various sources, and draw the conclusion that the operation is safe, and worthy of trial in cases where other methods of treatment have failed or are likely to be of little benefit. The operation appears to have made no headway in Great Britain, probably because the procedure is outside the domain of ordinary ophthalmic surgery, and is somewhat formidable. Apparently, however, the operation is safe if properly done, and doubtless some surgeons in this country will give it a fair trial and record their experience, whether favourable or the reverse.

Bacteriology of the Eye.—In *L'Echo Medical* of 16th March 1902, there is an interesting account by Dr Painblan of the bacteriological investigation of 307 cases. These include 198 cases of conjunctivitis, 48 of keratitis, and 42 of dacryocystitis. The method chiefly employed was the microscopic examination of fresh films, and the author maintains that this is perfectly adequate for the diagnosis in most of the cases. The method was supplemented by cultures when necessary. Of the cases of conjunctivitis Dr Painblan found—

41 were due to the gonococcus (mostly Ophth. Neonat.).
68 „ „ Weeks bacillus.
17 „ „ Morax-Axenfeld bacillus.
21 „ „ pneumococcus.

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26 were due to the diphtheria (Lœffler) bacillus.
9 „ „ streptococcus.
3 „ „ staphylococcus.
1 „ „ bacillus coli.

The number of cases showing Lœffler's bacillus will strike an English reader, true diphtheritic conjunctivitis being rarely seen in this country. Membranous conjunctivitis is seen quite commonly, associated not with Lœffler's bacillus, but with other organisms, especially streptococci. Many such cases are instanced by Dr Painblan.

Of the cases of keratitis, thirty-four were primary corneal affections, and in all an abrasion of the epithelium had prepared the way for infection. Twenty-four of these were due to the pneumococcus, and in all the cases of typical "ulcus serpens" this organism was found. In about half the cases of dacryocystitis the pneumococcus was present in the secretions from the tear passages, but the variety of organism found did not seem to have any very evident bearing on the clinical features or progress of these cases.

Hypopyon Keratitis. — Much has been written lately, especially in Germany, on the pathology of this affection. The method of investigation has been in most cases the detailed examination of eyes enucleated at various stages of the septic process. The cases where from death due to an intercurrent affection an eye with hypopyon keratitis but otherwise healthy comes into the hands of the pathologist are necessarily rare. Most of the material examined consists therefore of sightless eyes, especially cases of glaucoma absolutum, attacked by a septic keratitis and enucleated on account of pain. Doubtless in these cases the spread of the septic process is much favoured by the condition of increased tension of the globe and the diminished resistance of the tissues. Consequently the changes observed will not always truly represent what takes place when a healthy eye is attacked by a septic corneal infection. Some published cases, however, have occurred in previously healthy eyes and are therefore of greater value. Observers are generally agreed that the pneumococcus is the organism commonly causing the disease, though other pyogenic organisms are also frequent causes. The great frequency of infection from the tear passages is admitted. The question of whether the membrane of Descemet remains intact even in the presence of a large hypopyon, or whether a "Früh perforation" may occur has been hotly contested. While opinions remain divided, the majority of observers appear to admit the possibility of this

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premature erosion of the membrane. Elschnig thinks the membrane may be eroded from behind at the seat of the hypopyon. The usual course of events is undoubtedly that this membrane remains long intact. It is so figured by Prof Greeff in his new treatise on Eye Pathology. Up to the time of perforation the anterior chamber remains free from organisms. This fact explains the rapid relief of symptoms when the spread of the ulcer has been successfully checked.

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Hertel, "Ueber eitrige Keratitisheim Menschen," *v. Graefe's Archiv.*, L. iii. 2.

Wentersteiner, "Ueber den hinteren Abscess der Cornea," *v. Graefe's Archiv.*, L ii. 3.

Detachment of the Choroid.—Prof. Fuchs' paper[1] on post-operative detachment of the choroid is sure to attract much attention, owing both to the intrinsic interest of the communication and to the high reputation of the author.

The cases reported on occurred between August 1900 and July 1901, and followed cataract extraction or iridectomy. Twenty-three cases were observed after 493 cataract extractions, 14 in 318 cases of combined, and 9 in 175 cases of simple extraction. The percentages were thus 4·4 per cent. after combined and 5·1 per cent. after simple extraction, showing that the method of extraction did not appreciably affect the result. Of the 23 cases, complications at the operation had occurred in 6 cases.

Only cases where the lesion was suspected were examined for its presence. A shallow anterior chamber or diminution in its depth after the chamber had re-formed, was the sign which aroused suspicion.

After iridectomy 14 cases were noted, or 10 per cent. In 11 of the 14 observed cases, the iridectomy had been for glaucoma. No case was observed after linear extraction or after needling. Fuchs enumerates certain conditions which he thinks may predispose to choroidal detachment. (1) Increased rigidity of the sclera in old people. He supposes that on the reduction of tension, following escape of aqueous after the incision, the elastic choroid contracts, while the rigid sclera is unable to follow it, and consequently a gap is left between the two. A tear in the insertion of the ciliary body establishes communication with the anterior chamber, from which the fluid is aspirated into the

[1] *Graefe's Archiv*, L. iii. 3. Prof. Dr Ernest Fuchs. "Ablösung der Aderhaut nach Operation."

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supra-choroidal space. (2) The cut with the Graefe knife made from within outwards slightly drags on the sclera, and may be the cause of separation of the insertion of the ciliary body, especially when the pupil is under eserin. (3) Increased tension if present.

Signs of detachment of the Choroid.—Stress is laid on the disappearance or shallowing of an already formed anterior chamber without any giving way of the wound. In some cases traces of blood appeared in the anterior chamber. Most of the cases occurred between the second and the eighth day after operation. Probably detachment occurred earlier in many cases, but a satisfactory ophthalmoscopic examination was not always possible. The duration of the detachment varied from one to thirty days. Two days was the duration observed in seven cases. The prognosis is absolutely favourable, and vision was unaffected after recovery. A large detachment is readily visible, by side illumination, as a light brown rounded eminence sometimes projecting even beyond the middle line of the pupil. With the ophthalmoscope the projection appears dark. The flatter detachments are not visible by side illumination. With the ophthalmoscope the detachment shows as a dark patch, darkest at the edge. The bending of the larger retinal vessels as they pass on to the detachment is readily visible. Very shallow detachments are readily overlooked. Folding was noted frequently, especially in the shallower detachments. These folds are not so steep as in retinal detachment, and do not shake. The site of the detachment is usually temporal or nasal. Detachments above or below are apparently much rarer, and are practically only found along with lateral ones. The largest detachments were noted after glaucoma iridectomy.

Pathology.—Nine eyes were examined. Four cases are first quoted where a successful extraction had been done, and in which shallow choroidal detachment had been diagnosed, and where the patient had died of an intercurrent affection.

In these cases serous coagulable fluid was found in the supra-choroidal space infiltrating the tissue lamellæ; tears were found over the insertion of the ciliary muscle.

In a case where inflammatory trouble set in after bursting of the healed eye on the fourteenth day, the choroid was very extensively detached. The cases where the choroid is detached from traction of membranes, etc., following severe and protracted inflammation, belong to a different category. They are accompanied by retinal detachment.

Another group of detachments is that where bleeding is the cause. Two such cases occurred after operation for inflamma-

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tory glaucoma, due doubtless to the bursting of diseased choroidal vessels when the tension was suddenly lowered.

Detachment by actual inflammatory exudation appears to be very rare. Such exudations from the choroid appear under the retina, not in the supra-choroidal space.

SURGERY

SOME RECENT OBSERVATIONS ON THE SURGERY OF THE STOMACH

By DAVID M. GREIG, F.R.C.S.E.,

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IN the *Scottish Medical and Surgical Journal* four years ago, a well-known American surgeon is recorded to have written, in an American journal, concerning the direct opening from the skin into the stomach in gastrostomy, "this very ancient and very objectionable method still seems to hold sway in Great Britain." It seems that other countries now desire to participate in this obsolete proceeding. Terrier and Gosset (1) in a recent paper advocate the direct method of gastrostomy. They incise the abdominal wall internal to the left linea semilunaris above the umbilicus; divide the anterior sheath of the rectus muscle; split the muscle; divide the posterior sheath and so open the peritoneum. The stomach caught forward by four pressure forceps is drawn out and stitched in the following layers: (1) through the musculo-serous layer to the peritoneum and the posterior sheath of the rectus; (2) through the musculo-serous layer of the stomach to the anterior sheath of the rectus muscle; (3) the musculo-serous layer is then transfixed, and through the opening thus made the mucous coat is drawn up, transfixed, and the edges sutured to the skin. The rest of the incision is then sutured. The opening goes directly into the stomach, the muscle acts as a sphincter, and the bulging mucous membrane as a plug. This, they say, is efficient. The operation takes fifteen to twenty minutes. They record in support of their contention eight cases. Of these one died in twenty-four hours, four lived seventeen to forty-one days, and one was alive nine months after operation, one four months, and one three months after the gastrostomy. They rightly consider that the criterion of efficiency in gastrostomy is the continence of the opening, and this they maintain is guaranteed by the plug of mucous membrane.

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Linossier (2) mentions that during 1901 over twenty cases of total gastrectomy with recovery have been reported. He points out that this is no proof that the organism can exist without a stomach, merely that other organs are capable of taking on the work of the stomach. Starch, he says, is doubtless affected by the saliva, but the amylolytic process is continued in the stomach until the gastric contents reach a certain degree of acidity. Also that fat is saponified in the stomach to a considerable extent. The pancreas assumes this part of the stomach's functions after gastrectomy.

The same author makes reference to about seventy cases of stenosis of the pylorus. These he classifies thus:—

A. Stenosis of the new-born.

1. Absence of communication between the stomach and duodenum.
2. Narrowing of the pylorus due to—
   - (*a*) Fœtal peritonitis.
   - (*b*) Pinching of the intestine.
   - (*c*) Compression by a congenital tumour.
   - (*d*) Syphilis.
3. Hypertrophy of the pylorus. In this the pylorus is transformed into a walnut-sized tumour perforated by a narrow canal. Here all the coats are involved, especially the circular muscular fibres.
4. Spasmodic stenosis.

The symptoms of stenosis come on immediately after birth if the obstruction is absolute, in one to three months if partial, and intermittently if spasmodic. There is absence of bile in the vomit (according to Weill the vomit in the new-born rarely contains bile); constipation more or less absolute according to the degree of stenosis. Peristalsis of the stomach may be felt or a pyloric tumour made out. There is absence of free hydrochloric acid and excess of lactic acid. The surgical treatment consists of gastro-enterostomy. Lange (*Münch. Med. Woch.*, No. 7, 1901) records 14 cases with 9 deaths. Spasm, which is supposed to be due to hypersensitiveness of the gastric mucosa, is treated medically, but if the diagnosis is erroneous the child emaciates so rapidly that it becomes unfit for operation. The author thinks that cases which were cured by digital dilatation were probably spasmodic.

B. Stenosis of the adult.

1. Myoma of the pylorus.
2. Spasm. This is mostly in women, and is ascribed to tight lacing, the pylorus being compressed against the vertebral column. The symptoms are acidity and

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pain, a small, rounded, firm, mobile tumour, the size of the index finger, not densely hard and painful on pressure. This tumour disappears as the pain wears off.

3. Contraction after ulceration.
4. Malignant disease.

Probably the majority of writers on the subject of gastro-enterostomy agree that the posterior trans-mesocolic route is the better one. A most interesting paper on this subject has recently been written by Prof. Terrier of Paris (3). The various steps of the operation are therein fully considered. The details correspond very closely with those given by Cheyne and Burghard (4), but are fuller, and to that extent more useful. Prof. Terrier's results are remarkable, and, I take it, unsurpassed. He has operated on 22 cases with a single death. This gives a percentage of 4·55. He points out that Haberkant had 49 cases with 21 deaths, a mortality of 42·8 per cent; Von Hacker records a mortality of 36·8 per cent.; and Mehler 65·2 per cent. These records make Terrier's results most striking. I think that Cheyne and Burghard's recommendation to stitch the distal portion of the sutured jejunum to the stomach wall is worthy of more general adoption as a simple method of obviating the establishment of the condition known as "circulus vitiosus." The recommendation of these authors also to protect the bowels or other viscera by means of *linen* cloths seems to me to be a useful one. Linen is less absorbent than cotton or gauze, and other absorbent material will be used about the operation area, not for protective purposes, but for absorption only.

Terrier evidently believes strongly in preparatory washing out of the stomach. He uses boiled water slowly cooled. It is done for several days before the operation, and, lastly, just before the operation is commenced. Purgatives before operation are not recommended, and if the patient is very weak, subcutaneous injections of normal saline are given. After operation, food is withheld for twenty-four hours, though the patient is given boric or Vichy water to wash out the mouth with. Then feeding is commenced with milk and Vichy water, or champagne if stimulation is required. Terrier further recommends frequent washing out of the stomach if the patient has a dry tongue, acid or bitter regurgitations, or any rise of temperature. To prevent parotitis or septic pneumonia he urges the use of frequent antiseptic mouth washes. The retention of a rectal tube is used to relieve intestinal flatulence as in any other abdominal operation. Diarrhœa coming on slowly he regards as a sign of extreme gravity. He recommends for this the avoidance of purgatives and the use of sub-nitrate of bismuth and opium.

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The case for anterior gastro-anastomosis is pretty fully set forth by Mayo (5). He recommends the proposal of Maylard to examine the stomach's interior through a one and a half inch speculum passed into the stomach through an incision in its wall. He uses the Murphy's button instead of sutures. His experience consists of 69 anterior and 11 posterior gastro-enterostomies "with equally good results."

There seems to be a concensus of opinion that the most suitable anæsthetic for these cases is chloroform, because it "does not produce so great a congestion of the bowels as ether," it "produces more complete relaxation of the muscles," and it does not interfere with the breathing so much.

Quenu and Petit (6) contribute a valuable paper on cicatricial stenosis of the pylorus due to the swallowing of liquid escarotics.

They estimate that about half of the patients who swallow such liquids die. The causes of death in these cases are complications in the respiratory passages, or perforation of the stomach or duodenum. In others, in which there is no gross lesion, the cause of death is shock. If the patients do not succumb at once, or early after the accident, symptoms pointing to pyloric stenosis appear three or four weeks later. If nothing is done for the relief of the condition, the duration of life is from three to five months, the death being due to cachexia, or intercurrent disease such as pneumonia or perforation. Less commonly there are cases where the serious gastric symptoms do not appear for months or years. These are the cases which come ultimately to the surgeon. Medical treatment, washing out of the stomach and careful dieting may from time to time relieve the symptoms, but it is more than doubtful if anything approaching recovery ultimately follows these palliative methods. The treatment surgical consists in—

1. Dilatation of the pylorus.
2. Resection of the pyloric stricture.
3. Pyloroplasty.
4. Gastro-enterostomy.

The authors affix to their paper a table of thirty-five collected cases of operation for pyloric stricture, with eight deaths.

In an article considering the surgical treatment of gastric ulcer and its sequelæ, Körte and Hersfeld (7) note that the most frequent cause of pneumonia after such operations is the wound in the abdominal wall. The interference with respiration which this entails makes the patient breathe gently and shallow, and, avoiding coughing, facilitates the retention of mucus in the air passages. They reckon the mortality for such operations, *without serious complications*, to be between 20 and 25 per cent.

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The limitation of space prevents more than a short reference to the surgical treatment of operable cancer of the stomach as set forth in a paper by Folet (8). The case is that of a man of 43 years of age in whom the author performed posterior transmesocolic gastro-enterostomy and then excised the affected pylorus. The patient was alive and well eighteen months after the operation, and had gained considerably in weight. The tumour was a columnar-celled epithelioma.

Finally, I desire to mention a paper by Pantaloni (9) on the Y-operation for anterior gastro-enterostomy in non-malignant affections of the stomach. He records twenty-five cases with one death, an excellent record, forming an interesting comparison with Terrier's paper mentioned above.

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OBSTETRICS

THE INFLUENCE OF PREGNANCY ON THE NORMAL CIRCULATORY SYSTEM

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Continued from page 350.

II. Blood.

The question of the *constitution of the blood* during pregnancy has passed through vicissitudes analogous to that of cardiac hypertrophy and almost as numerous. Thus we find

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alternating doctrines of the plethora and the anæmia or chlorosis of pregnancy invoked in the elucidation of the most varied phenomena. It would serve no useful purpose to go through them all again here and I shall confine my attention mostly to the results of investigations made by modern methods and from material of which the local peculiarities have not been overlooked.

The amount of blood in and out of pregnancy has not been the subject of much investigation. We have one careful paper by Spiegelberg and Gschleiden who, making due corrections for the contents of the alimentary tract and the like and taking precautions to ensure the whole of the blood, found in 6 non-pregnant bitches the blood mass 7·87 per cent. of the true body weight; in ten pregnant the ratio was 9 per cent. The limits of variation were respectively 7·12-8·92 and 7·29-12·41 per cent.

For the specific gravity, Nasse, using blood got when venesection was routine, found in normal women 1·055 and during pregnancy (67 cases) to end of 6 months 1·052, 6-8 months 1·0497, 9 months 1·0513, and in ten puerperæ 1·0533. The s.g. of the blood serum was 1·0254 in pregnancy as compared with 1·0265 in normal women and also in puerperæ. For the fibrin he found an increase of 3·9 per cent. in pregnancy and 3·83 per cent. in the puerperium. These observations are somewhat old and would well bear repetition, but our opportunities are less plentiful.

On the numbers of *corpuscles* and the amount of *hæmoglobin* a fair number of estimations have been made, but the results of the observers vary considerably and there are evidently local peculiarities in the material. Mochnatscheff of St Petersburg found in six pregnant women the red corpuscles vary from 3,849,000 to 5,413,000, the white from 2469 to 14,400. The proportion of white to red varied from $\frac{1}{2014}$ to $\frac{1}{300}$. Willcocks of King's College Hospital, London, in 22 pregnant out-patients found the proportion of white to red vary from $\frac{1}{1650}$ to $\frac{1}{184}$, the average being $\frac{1}{505}$. The red corpuscles varied from 3,490,000 to 5,290,000. In three cases where more than one count was made the later reading was always lower. The colour index of the corpuscle always improved, and with its value about ·70 was in marked contrast to that of chlorosis. Elder and Hutchison of Edinburgh in 16 women at parturition found the red corpuscles vary from 2,900,000 to 5,000,000, the average being 3,978,937. In 11 cases the white corpuscles varied from 8000 to 25,000 with an average of 14,522. Cases examined again later showed considerable decrease of white corpuscles, except in one patient who did not suckle her child. The hæmoglobin in 7 cases varied from 60-83 per cent. Dr Henderson has newly published the results of a most painstaking research on the indoor patients of

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the Glasgow Maternity Hospital. In 45 cases during or immediately after labour the red corpuscles varied from 2,260,000 to 5,000,000 with, excluding two very abnormal cases, an average of 3,965,348. During the puerperium there was a fall for two days, then on the whole a slight rise, with a slight fall on the seventh, tenth and eleventh days. As the number of cases counted on each day is not always the same, it is possible that the variations may be partly due to the accidental inclusion on some days of a greater number of the more or of the less anæmic cases. To avoid this I would suggest that in any future research for each case counted on any day there should be taken not the absolute number of corpuscles, but the difference from the initial number in that case. This would eliminate what one might call the personal equation of that case and probably give a more accurate picture of the common variation. In 36 cases, one with 45 per cent. being excluded, the hæmoglobin varied from 60-80 per cent., the average being 68·2 per cent. The colour index at term was ·78.

In 38 cases, those in which chloroform anæsthesia or other disturbing factor had been operative being excluded, the white corpuscles varied from 10,600 to 36,600, with an average of 21,365. The average in 25 multiparæ was 21,052 and in 13 primiparæ 21,969. There was thus a marked leucocytosis shown by every case. During the puerperium the white corpuscles decreased rapidly to the eighth day, when the average of 17 cases was 10,147. Cabot found similar results, but his lowest figures were on the fifth day, a result which may be explained by the peculiarities of the cases which chanced to have been counted on that day. In one case of sepsis Henderson found that the number of leucocytes never fell below 18,000. Henderson mentions that in cases with female children the average leucocyte number was 5000 above the average of those with males. He does not however decide whether the difference is essential or not. Hofbauer in 20 cases found at the beginning of labour the white corpuscles average 9235. During labour there was an average gain of 5000. This would be a normal consequence of the bodily exertion.

Cohnstein, working with a dozen sheep, seven being pregnant, found a considerable diminution of the red corpuscles in pregnancy, but as marked a rise in the amount of hæmoglobin. Fehling in 1886, for the first time, used Fleischl's hematometer for the problem. Taking 93 per cent. as the normal hæmoglobin measure for women, he found that while most of his pregnant cases just reached this, a third of them exceeded it, and a fourth were below it. The red cells in his cases were slightly over the normal. A year later Meyer (Berne) found

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in 37 cases a diminution of both corpuscles and hæmoglobin, but his results are vitiated by the inclusion of abnormal cases, and his high blood counts of 5,900,000 and 5,200,000 for non-pregnant and pregnant respectively, with hæmoglobin measures of 85·4 per cent. and 77·6 per cent. are suggestive of some peculiarity in his material or irregularity of observation. Winkelmann (Heidelberg), working with women under the favourable conditions of institution life, found the hæmoglobin 97·3 per cent. Reinl (Prague) found in 10 non-pregnant women an average of 95 per cent. hæmoglobin and 4,797,300 red corpuscles, while, as the result of repeated observations of 51 pregnant women, 24 exceeded 95 per cent. hæmoglobin and 21 showed an increased number of red corpuscles. Cases with lower readings show a large proportion as having had poor diet. Dubner, for 10 non-pregnant women in favourable conditions of life, found 5,219,000 red corpuscles and 94 per cent. hæmoglobin, and in 20 normal pregnant women 4,956,000 and 88·35 per cent. respectively. R. Schroeder, from repeated examinations of 34 pregnant women outside hospital, found that 9 lost and 25 gained in hæmoglobin. In corpuscles, of the 9, 8 lost and 1 gained, and of the others, 4 lost and 21 gained. Bernhardt, in 20 healthy women, found the average corpuscles number 4,458,000 (limits, 3,650,000-5,210,000) and 80·5 per cent. (limits 69-98) hæmoglobin. In 32 maternity cases ante-partum the first examination averages were 4,515,000 and 81·2 per cent., and the last 4,655,000 and 83·7 per cent.; post-partum he found 4,362,000 and 76·8 per cent., and at discharge 4,615,000 and 81·6 per cent. As the sum of all these observations, it is fairly certain that there is no such thing as an essential anæmia of pregnancy, and that under favourable conditions of life the pregnant woman becomes even rich certainly in hæmoglobin, probably in red corpuscles. The evidence of leucocytosis in late pregnancy is uniform and definite.

The effect of delivery is to produce a marked diminution in both red corpuscles and hæmoglobin, but the loss is so rapidly made good that usually by the time of discharge the values are nearly as high as at the end of pregnancy. The white corpuscles decrease rapidly in the puerperium, except during galactostasis or sepsis.

On the coagulability of the blood in pregnancy and the puerperium no modern investigations have, so far as I have been able to ascertain, been made. Its important relations to the serious accidents of puerperal hæmorrhage and to thrombosis would make that a useful piece of work.

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III. Pulse.

Observations of the *blood pressure* have not been frequent. Vinay made several, but never found higher readings than normal except in albuminurics. Wiessner found a slight increase during the last months of pregnancy. Fellner found his readings within the normal limits or slightly higher. During labour the pressure rises during the pains with a gradual rise of level as they become more intense. There is a moderate relaxation when the waters break and a sudden fall when the child is born, the reading being then under the initial value. It then rises and falls with each relaxation and contraction of the uterus. The *sphygmogram* during pregnancy Louge describes as having a flat ("decapitated") crest. Kehrer describes various rhythms of the secondary waves. We have not yet learned to make safe inferences from such observations. Of the *pulse-rate during pregnancy*, Louge says that in 50 women he obtained an average of 86 beats. Hoffner in 62 per cent. found it 80 or more in the morning. Heil, on the other hand, says that rates under 65 are more common during pregnancy than on any day of the puerperium. Vejas found it usually 72-78. Jorisenne asserted that even from the first months of pregnancy the pulse-rate ceased to vary with change of the position of the patient. This is not so, but occasionally such a phenomenon is found in the later months.

Much attention has been devoted to the *pulse-rate during the puerperium*. In 1861 M'Clintock pointed out its slowness (44 to 60) which in a case of triplets fell to 30. He adds that the phenomenon does not depend on any condition peculiar to child-bed. In the next years Blot and other French writers studied the matter, and in a paper presented to the French Academy of Medicine, Blot systematised the matter, and it became part of the orthodox medical creed. Blot states that in physiological conditions the phenomenon is usual, the degree alone varying, and that it is not confined to women with a habitually slow pulse. He had thrice seen descent to 35, but 44 to 60 was the usual range. The duration varied from several hours to ten or twelve days, long duration and low rate being associated. It commenced usually within 24 hours, increased for a time, was stationary, and then disappeared. It was usually more common in multiparæ. Many papers since have dealt with the same subject. As to the frequency of the occurrence, the observations vary considerably, from the 63 per cent. of Olshausen to the one-sixth of Falaschi. Louge found it in a fourth of his primiparæ and a third of his multiparæ. Several authors (Hemey being the first) point out an irregularity of the

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pulse associated with the slowing, and this is emphasised by Neumann of Schauta's Klinik, in an interesting paper published in 1895. Neumann, who made observations on some 500 women, gives no statistics of the frequency of the phenomenon. He took, however, a most important step in the investigation of its production by injecting ·001 gm. (rather less than $\frac{1}{60}$ gr.) of atropin sulphate in watery solution in a good many cases, and counting the pulse-rate every ten minutes after. In all cases he got the same result. In from half to one hour the pulse became softer, its rate rose to double or more, and if it were irregular it became rhythmic. Two hours after the injection the pulse had usually become again slow and irregular. The conclusion is, of course, that the phenomenon is produced through stimulation of the cardiac fibres of the vagus, probably through the centre, as the respiration and alimentary tract show no associated phenomena.

In 1897 Heil of Heidelberg, making observations of 100 women during pregnancy, as well as after labour, found pulse-rates under 65 more often during pregnancy than in the puerperium, while cases under 75 were found more common only on the fourth day of the puerperium.

In 1900 Fellner published the following results from 80 cases after labour :—

Rate.	10 h. p. P.	1st day.	2nd day.	3rd day.	4th day.	5th day.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
90 to 102	8	7	8	10	12	5
90	17	3	3	4	4	5
84	8	15	24	16	8	1
78	8	7	14	11	8	4
72	43	31	23	23	24	36
66	8	12	16	18	20	16
60	8	17	7	7	8	9
54	...	7	2	5	7	5
48	...	...	3	6	9	4

From this it is evident that in his cases rates over 72 are more common at all periods than rates below it.

Fellner undertook his researches without knowing Heil's results, and having, curiously enough, overlooked both, I had already asked Dr Maclaren to examine the evidence of our cases in the Dundee Royal Infirmary. The pulse-rates are regularly charted by the nurses, and Dr Maclaren has gone over the first

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hundred puerperal cases with a normal temperature. A detailed study of them will shortly be published, but meantime I am able to give the general result. Of the whole number, only 15 have a pulse-rate usually under 70, and not all of these were uncomplicated cases. The average morning and evening rates were :—

Day.	1	2	3	4	5	6	7	8	9
Pulse, A.M.	77·3	77·9	73·6	74·6	74·4	73·9	74·7	73	72·8
P.M.	73·4	75·2	73·1	73·5	75·6	75·3	73·9	77·1	75·7

We have no means of comparing them with the rates in pregnancy.

Varnier instituted two series of observations to test the varying doctrine as to the pulse-rate. In 32 pregnant women in the Clinique Baudelocque before delivery he charted the morning pulse-rate for periods which varied from 4 to 32 days. In 26 the curve was almost always over 75, in 2 always under, and in 4 it varied about that level. In 35 puerperal cases the corresponding figures were 1, 14, 20. Thus in 68·75 per cent. of the pregnant women the pulse was always over 70, while only 11·42 per cent. of the puerperal cases were so high. In the second series of 36 cases the pulse was charted before and after labour. In 26 the curve of the puerperium was distinctly lower than during pregnancy, in 6 they were practically equal, and in 4 the puerperal curve was higher. That comparatively low pulse-rates are to be found in puerperal women is certain. How far are they essential, how far dependent on the absolute rest in bed and other accidental circumstances, are questions for further evidence. We are not entitled to consider anything essential which is not found in a very large majority of healthy women and even in animals.

The yield of well-established fact from so much investigation is truly not great. Many of the propositions advanced from time to time must be pronounced not proven. The main points are: (1) During pregnancy the heart makes a slight increase, rather under the normal heart ratio to the increase in body-weight. (2) The total quantity of blood is increased even in its ratio to the body weight. (3) There is a distinct increase in the proportion of blood fibrin. (4) In favourable conditions of life the blood gains in white corpuscles during pregnancy and still more during labour. The red corpuscles become richer in hæmoglobin, and may increase in number. At delivery there

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is loss of white corpuscles, which continues during the puerperium, and a loss of red corpuscles and hæmoglobin which is rapidly made good during the puerperium. (5) There is no great increase in the blood-pressure except during labour.

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New Books and New Editions

Manual of Antenatal Pathology and Hygiene (the Fœtus). By J. W. BALLANTYNE, M.D., F.R.C.P.E., F.R.S.Edin. Pp. 528. Edinburgh: William Green & Sons. 1902. Price 20s.

THIS book will come as a surprise to many who have not realised before how much of the greatest interest has been discovered with regard to intra-uterine diseases. It deals not merely with obscure malformations and other curiosities of pathology, but is largely taken up with the consideration of problems of far-reaching interest which concern many branches of medicine and surgery. Dr Ballantyne's work is, we believe, the first attempt by a competent authority to discuss the phenomena, normal and abnormal, of ante-natal life in all their aspects, and to estimate their relation to the health of the individual in after life. The author has gained for himself a world-wide reputation in his somewhat occult branch of medical

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science, and the reader cannot but be struck with the extraordinary fulness of his information on all details of the subject. The enthusiasm, also, with which he approaches even the most obscure problems is quite contagious, and imparts an unexpected interest to many of his chapters.

The book begins with a general consideration of the occurrence of morbid processes before birth. The growth and development of the subject from the earliest times to the present day is first described. The various divisions of intra-uterine life are then explained. Starting from the "germinal period," before conception while as yet ovular and sperminal life are separate, we pass, after a week or so of a "post-conceptional" interval, into the five weeks of the "embryonic" stage. This is the organ-forming time and during it the first rudiments of the new being are laid down. Its main features, therefore, are *development* and *evolution*. Next, after a short "neo-fœtal period," we have the thirty-two weeks of the "fœtal" stage proper. This is characterised by *growth* and it lasts until birth introduces the "neo-natal," followed by the "post-natal" stage of existence. Each of these main divisions of intra-uterine life —the fœtal, the embryonic and the germinal periods—is liable to morbid changes peculiar to itself. The diseases of the fœtus include most of the complaints, inflammatory and other, which we have been in the habit of describing as intra-uterine or fœtal diseases. Those of the embryo result mainly in malformations such as we class under the heading of teratology; while the pathology of the germinal period deals with double monsters and hydatid moles and various matters of morbid heredity.

After illustrating, in chapter iii., the postponed effect of ante-natal disease by describing its influence in the domain of gynæcology, we are brought to consider its immediate effect at birth.

In the next chapter Dr Ballantyne deals in a most interesting way with the physiology of neo-natal life—the physiological traumatism of birth, the physiological re-adjustment after birth, and the ante-natal factor in the diseases of the new-born infant. He shows that the infant is endangered not only by the injuries he may receive during the labour and by the effect of the greatly changed circumstances in which he now finds himself, but also, further, by his bringing with him into the outside world a variety of lesions acquired *in utero* which exert an important influence on his future health.

In chapters v. and vi., some types of neo-natal maladies are briefly described, in order to illustrate how the ante-natal factor intrudes into early infancy. These are divided into four groups:

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(1) intra-uterine traumatisms; (2) intra-uterine infections; (3) neo-natal infections; and (4) disturbed neo-natal re-adjustments. These types are well selected; but why hæmatoma of the sterno-mastoid should be classed as an infective disease, on such very slender grounds as are here given, we cannot understand.

With chapter vii. the second division of the book begins, and in it the actual study of ante-natal pathology commences. The author starts with the fœtal period. He does so partly because it is the least difficult of the three. The pathology of the embryonic and germinal periods is to be dealt with in a future volume.

After a solid but not very inspiring or practical chapter on anatomy, the fascinating subject of the physiology of ante-natal life is considered in chapters ix. and x. In this field a great deal seems to have been done since Preyer's classical work appeared in 1885. The subject is certainly, as Dr Ballantyne says, "full of wonder." Fœtal pathology is next discussed—what we know of it and why we know so little.

The succeeding twelve chapters are occupied with a systematic consideration of the various forms of fœtal disease. These are looked at from the ante-natal pathologist's point of view, and this differs at many points from that of the physician and surgeon. While the clinician may not perhaps find all he expects in these chapters, to him, as to the pathologist, they can scarcely fail to afford very interesting reading and to open up many fresh and suggestive lines of thought.

After a chapter on intra-uterine death and another on diagnosis before birth, the author ends with two on intra-uterine therapeutics. These are interesting and practical, so far as is possible in the present state of the subject; but of course there is not very much to say about actual medication. In this, as in many other branches of therapeutics, prevention is better understood than cure.

The volume ends with a list of the author's previous writings —no fewer than 228 in number—a list of nearly a thousand authorities in all lands whose writings have been studied in the preparation of the work, and a full and excellent index. The illustrations are generally good, but the coloured plates of frozen sections might probably have looked fully better had they been executed in black and white.

We feel certain that Dr Ballantyne's "Manual" will receive the welcome due to a really valuable addition to medical literature.

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Aphorisms, Definitions, Reflections, and Paradoxes, Medical, Surgical and Dietetic. By A. RABAGLIATI, M.A., M.D., F.R.C.S.Ed. Pp. xvi. + 292. London: Baillière, Tindall & Cox. 1901. Price 7s. 6d. net.

IT is, we think, a misfortune, that so few medical writers of the present day venture to discourse on the more theoretical or philosophical aspects of their subjects. The trend of medical thought has for the past century been so strongly towards the practical, towards the finding of facts and the perfecting of all methods whereby they can be got at, that we are apt to give less than the due measure of attention to such reflections as are packed into the book before us. Now although it is but rarely in the course of the ages that a master of generalisation such as Darwin appears, there is very much that may be done by men of trained intellect in the same direction. Dr Rabagliati thinks "that in many directions we have made so many careful and accurate observations that it is far more incumbent on us to make a good use of the observations we have already made than to add to them. We want a philosophy rather than a science." He is convinced "that a true science of medicine and surgery founded on a sound philosophy is possible, and that it is to be created through the knowledge of the circulation of the blood and fluids of the body." This again depends on the relations of the body to food, air, and exercises, and in this order food first, then air, then exercises. Our author's main effort is an eminently practical one, namely, to persuade his colleagues that the great bulk of life's physical ills are due to over-eating, and that they can be properly treated and in most cases prevented or cured by restriction of diet. "The ordinary plan of eating thrice daily is probably for the average townsman, and townswoman, and townschild once too often" (p. 22). Diets such as Ranke's and Moleschott's he considers much too large, and he gives as an indication of a sufficient quantity, 12 to 24 ounces of ordinary unmixed food daily, taken in two portions, or meals, eight hours distant from one another. This for the average townsman in an office or factory or shop; a few ounces less for an average society woman or domestic servant (p. 19). Dr Rabagliati is no vegetarian, allowing all kinds of food unless it is found to disagree in any given case. Everyone will admit there is a large measure of truth and common sense in the general statement that most of us eat more than is actually required, and that the processes of metabolism would be more efficiently performed on a diet which exactly corresponded to the needs of the organism. And this book, like Dr George

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Keith's attractive "Plea for a Simpler Life," may be regarded as a timely protest against the practice of "stuffing" which is associated with the sanatorium treatment of tuberculosis in so many instances. It may be quite true (and the reviewer certainly thinks so) that the cure of pulmonary consumption depends mainly on fresh air, rest and feeding, but who can behold a mountain of tremulous blubber, a man or woman rapidly fattened up to something between two and four stones more than the ratio to height would justify, without feeling that the functions of the body are being in many ways impeded, that the foundation of other troubles is perhaps being laid, and that the patient deserves a very large measure of sympathy as the victim of a blind, or at least short-sighted, enthusiasm? Dr Rabagliati prefers to dwell on points that are likely to raise controversy, rather than on subjects that are obvious and likely to be granted. His pages simply bristle with points that are unexpected and novel. "Anæmia bears to tuberculosis the same relation which constipation does to diarrhœa, or which amenorrhœa does to menorrhagia—the one is primary or actionary, the other is secondary or reactionary; the one corresponds with *strictum*, the other with *laxum*. And both are due to poly-siteism and pollaki-siteism as their remote cause" (p. 250). "If a boy is stiff next day after doing gymnastic exercises, or if a ride on horseback or playing some game as cricket, for instance, makes one stiff, and sore, he has been over-fed." "When dis-siteism [taking two meals daily—*Rev.*] fails to relieve or cure recurring ailments, mono-siteism may succeed. If this fails, try a long course of a-siteism. If none of these cures, the case is generally incurable" (p. 197). What "a long course of a-siteism" means is, evident from the following:—"Even if a-siteism for six weeks did prove fatal (which, however, it does not), the question is, whether it would be preferable, if one must die, to die of fasting or to die of disease." From a page and more taken up with the names of troubles to be traced to eating too much or too often one may extract the following:—tonsillitis, pneumonia, rheumatic fever, chorea, chilblains, corns, Raynaud's disease, cystitis in women with urethral caruncle, great susceptibility to take cold, pruritus *ani et vulvæ*, all disorders of menstruation, and so forth. Our author speaks with no uncertain voice as to the origin of cancer from the same cause. The details of one fatal case are given, from which it appears the lady took about twenty-seven ounces daily, largely bread, "not at all a large amount of food if taken at two meals, say 9 A.M. and 4 or 5 P.M., but which, taken as it was at short intervals (the actual times were 8, 12, 4.30 and 8.30 or 9), allowed the digestion no

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rest, and led to the lamentable consequences described" (p. 234). We have not space to quote further, but the theory as to the predisposing cause of disease is upheld by many arguments and illustrated by many cases. We think our author limits the possible causes of disease too much, and does not make sufficient allowance for our ignorance of the chemistry of the animal body both in health and disease, and even on his own ground one might pick holes in his reasoning and criticise his observations. Nevertheless we cordially commend the work to all who enjoy a stimulating and suggestive bit of thinking. We must pay a tribute to the author's knowledge of the dusty tomes of ancient writers on medicine, but we trust the English language will yet awhile be spared the somewhat unlovely additions to medical terminology that are here freely introduced, additions which would make "Liddell and Scott" an indispensable companion once again.

The Medical Annual. A Year-Book of Treatment and Practitioner's Index. Twentieth Year. Pp. 768. Bristol: John Wright & Co. 1902. Price 7s. 6d.

THE Medical Annual for 1902 contains in a compact form much information on a variety of subjects, the greater part of the volume presenting an admirable epitome of the most important additions to our knowledge of medicine, surgery and therapeutics during the past year. To the general practitioner it is one of the most useful and valuable of publications, even though there be other more ample and elaborate annual reviews of medical science.

Among the more important articles in the volume we may mention those on toxins and antitoxins, arsenical poisoning, coxa vara, gout, malaria, membranous colitis, metabolism, puerperal eclampsia, rheumatism, gastric surgery, teeth, uterine diseases, and errors of refraction and accommodation; whilst in illustration of the fact that the information contained in the volume is up to date, we may refer to the articles on the therapeutic use of formic aldehyde, of suprarenal extract, and of the X-rays, to the paragraphs on the etiology of eczema, herpes zoster, pancreatitis and posterior basic meningitis, and to the articles on the urine and the colony treatment of epilepsy. Under the heading of Phthisis, we regret, however, to see that Ferran's investigations on tuberculous sputum are looked upon seriously, and that his fallacious and absurd conclusions are regarded as possibly of "great practical value."

A few pages deal with Sanitary Science, and at the end of

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the work are notes of recent legal decisions affecting the public health and the medical profession, a review of new inventions and pharmaceutical and dietetic articles, and a list of the principal medical works published during 1901—a list the value of which would have been enhanced had some of the more important works in German and French been added.

The volume is well illustrated, and contains twenty-five plates depicting various cutaneous affections such as arsenical poisoning, erythema induratum, mycosis fungoides and syphilis, the microscopic appearances of the blood in health and disease, lateral curvature of the spine, etc., besides types for determination of the visual acuity.

Pocket Cyclopedia of Medicine and Surgery. Edited by GEORGE M. GOULD, M.D., and WALTER L. PYLE, M.D. Pp. 580. London: Rebman & Co. 1902. Price 5s. net.

ALTHOUGH in the publisher's announcement this little book is described as a convenient reference manual for students, it is more suitable for refreshing the memories of those already educated. It includes not only short accounts of diseases, symptoms, methods of treatment, but also of drugs—their actions and doses. The subjects are arranged alphabetically. The editing is on the whole well and carefully done; there are, however, some references which are blanks. The editors have passed some statements which are more than doubtful: *e.g.* under "Labor" it is advised that examination should be made frequently, in the second stage every ten or fifteen minutes. In the treatment of Asphyxia neonatorum no difference is made between A. livida and A. pallida. As in the latter the reflexes are abolished, peripheral stimulation is useless.

Clinical Methods. A Guide to the Practical Study of Medicine. By ROBERT HUTCHISON, M.D., M.R.C.P., and HARRY RAINY, M.A., F R.C.P.Ed., F.R.S.E. New and enlarged edition, with upwards of 150 illustrations and 8 coloured plates. Pp. xii. + 612. London: Cassell & Co., Limited. 1902. Price 10s. 6d.

THIS favourite guide to clinical work appears in a somewhat enlarged form, the additions to the chapters on the blood, the nervous system, and bacteriology being rendered necessary by our rapidly growing knowledge in those departments of medicine. The fact that the first edition had to be reprinted in three

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successive years since its appearance in 1897 shows very plainly how much it is in demand. Nor does one feel surprised at this, for the little red book fully answers its purpose of being a reliable guide to modern methods of clinical investigation. A student could have no better companion in his ward work during the last two years of his course, and practitioners who are beginning to fear that they may be showing signs of old fogeyism may rest assured that if they work through this manual they will have no reason to feel uncomfortable when meeting an eminent consultant or an assistant fresh from college—the worst critic imaginable.

Anatomy: Descriptive and Surgical. By HENRY GRAY, F.R.S. Fifteenth edition. Edited by T. Pickering Pick, F.R.C.S., and Robert Howden, M.A., M.B., C.M. Pp. xlii. 1096. London and Bombay: Longmans, Green & Co.

A WORK which is in its fifteenth edition is presumably a successful one, and one which has obviously found favour in the eyes of those for whom it is intended. Yet it would be difficult to say wherein the exact merit of this work lies. It is far too large for the necessities of the ordinary student of medicine; no one, surely, can imagine that any student proceeding to his ordinary degree examination in anatomy studies this work from cover to cover; and the book is not even yet, and never has been, sufficiently accurate and scientific for the uses of the teacher and student of human anatomy. It therefore fails as a text-book and also as a book of reference.

The present edition is certainly an advance upon its predecessors; several new illustrations have been added, and the section on embryology is enlarged. The letterpress, however, still leaves much to be desired. An antero-posterior structure, like the arch of the aorta, is still described as possessing anterior and posterior relations instead of right and left. There is the constant misuse of the term "beneath": sometimes it is used to imply "below," and sometimes "behind"; then there is a lack of accuracy about the movements occurring at the various joints.

These minor objections notwithstanding, the work remains as a sufficiently good standard work of reference for the ordinary student, to whom the beauty of many of the illustrations will go far to recommend the book. We are pleased to notice that the publishers have taken to heart the criticisms which we had occasion to offer when reviewing the previous edition—they

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have called in the services of a modern anatomist, with the result that the meso-cæcum has disappeared from the present edition, as indeed it did long ago from the anatomy of the human frame.

Outlines of Anatomy. A Guide to the Methodical Study of the Human Body in the Dissecting-room. By EDMUND W. HOLMES, A.B., M.D. Second edition. Pp. 185. Lancaster, Pa.: Press of the New Era Printing Company. 1902.

IF the reader can imagine the directions to the dissector bodily removed from the ordinary manual of practical anatomy and transferred to a small booklet with some fearful and wonderful illustrations thrown in, he will have formed a very accurate idea of the present work.

The author, in his preface to this—the second edition—dated from 1930 Chestnut Street, Philadelphia, states that "The book cannot be used as a quiz compend; it does not take the place of the larger treatises." After perusing the book we think the latter piece of information quite unnecessary, and the former inaccurate. The whole work seems to be one huge "quiz."

The Accessory Sinuses of the Nose, their Surgical Anatomy and the Diagnosis and Treatment of their Inflammatory Affections. By A. LOGAN TURNER, M.D., F.R.C.S. Edin. Pp. xiv. 211, with forty plates and eighty-one figures. Edinburgh: William Green & Sons. 1901.

THIS important work is at once a credit to its author, to the school with which he is connected, and to its publishers. Containing, as it does, much original matter and many previously unrecorded observations, it is likely to remain, for many years to come, a standard work of reference to both the rhinologist and the anatomist.

To all intents and purposes the present work is divided into two parts: a first almost purely anatomical portion dealing with the anatomy of the nasal fossæ and the accessory sinuses, and a second surgical and clinical portion embodying the practical application of the author's work in these particular fields. To the anatomist, the first part of this work must appeal most strongly, not only on account of the beauty of the illustrations, but more especially for the faithfulness and originality of the accompanying letterpress, which embodies a most useful series

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of observations on the skulls of many different races of mankind; whilst to the rhinologist, the chapters on the trans-illumination of the various sinuses must of necessity be of singular importance.

The entire work is illustrated throughout in a remarkably clear and beautiful manner from numerous preparations, the majority of which embody the author's original investigations. As regards the letterpress, it seems a pity that so much really excellent work should have been slightly marred by the constant use of the somewhat bald terms "We have" and "You have." But this, in the midst of so much which is original, lucid, and the fruits of genuine honest work, cannot possibly detract from a book which is, and is likely long to be so, the most accurate work on this particular subject. A special word of commendation is also due to the publishers for the attractive way in which Dr Turner's work has been produced.

Stricture of the Urethra and Hypertrophy of the Prostate. By P. I. FREYER, M.A., M.D. Second edition. Pp. 132, 48 illustrations. London: Baillière, Tindall & Cox. 1902. Price 5s.

THE first six lectures in this work are practically reproduced as a reprint of the first edition, but the author has in Lecture VII. added an epitome of two papers published in the *British Medical Journal* of July 1901 and February 1902 upon the operative treatment of enlarged prostate. Three lectures (60 pages) are devoted to stricture of the urethra, and give from the practical standpoint an excellent account of the treatment of that condition. Mr Freyer's practice conforms closely to that of Sir Henry Thompson, and is more accurate than his scientific knowledge of the subject, whether it be considered from the anatomical or pathological side. He strongly advocates internal urethrotomy, and advises the use of Civiale's urethrotome, but the suggestion that no catheter should be tied into the urethra after division of the stricture is contrary to the usual practice and the reasons urged for this departure are not sound.

Catheterisation in early prostatic cases is too lightly recommended, and the risk of sepsis is not sufficiently emphasised; indeed the author does not yet recognise that sepsis is the cause of urinary fever, *vide* page 82. There is a marked inconsistency in two statements regarding the frequency of serious prostatic mischief, *vide* pp. 62 and 130. Mr Freyer has given a decided impetus to the treatment of prostatic enlargement by suprapubic prostatectomy by his recent work, and the lectures on this subject are worthy of careful perusal. The cases which he has

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related have been most successful, but it is important to remember that all enlargements of the prostate do not permit of enucleation.

Matière Médicale Zoologique: Histoire des Drogues d'Origine Animale (Zoological Materia Medica: Account of Drugs of Animal Origin). By Professor H. BEAUREGARD. 8vo, pp. 388. Paris: C. Naud. 1901. Price 12 frs.

IT is difficult to know why the late Professor Beauregard wrote so large a volume on what is, after all, a very limited subject. Indeed, there are obvious signs of what is vulgarly called "padding," but one must remember that the inquiries into the perfume glands of mammals and cetacea, etc., formed much of the life work of the author, and to him such had, perhaps, an exaggerated importance. It was surely unnecessary to describe the general structure of the mammalian body and the functions of its organs or to enter into details regarding the anatomy of each animal which furnishes (or, more happily, used to furnish) substances which are included in Materia Medica. Although it is a most interesting book to read, we are at a loss to know to whom it will appeal. Surely the already overburdened medical, or even pharmaceutical student, would hardly be expected to remember the whole skeletal structure and dentition of the civet or of the castor.

Elaborate descriptions with diagrams are given of the anatomical situation and structure of the scent-bags of the civet, castor, musk deer, etc. The author shows that the secretion castoreum is derived from a desquamation of stratified epithelium in preputial diverticula of the animal. If, therefore, he says, the anatomical structure be correctly known, we are furnished with the best means of estimating whether a specimen be true or not. Thus a section of a true castor gland ought to be traversed by fine sinuous lines of whitish colour which are really folds of mucous membrane so developed as to multiply the surface of desquamation. The author demonstrates that the so-called anal glands of the civet are really preputial glands. In Africa and India the species which produce musk are carefully kept in captivity and the secretion removed from time to time by artificial means. Spermaceti occurs as an oily liquid in a large cavity in front of the head of the living cachalot. Each male may furnish from 50 to 100 barrels (each of 25 gallons d so the money value of such a cachalot is easily understood. The same animal also furnishes the highly-valued ambergris

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This is formed in the rectum, and at first has a fæcal odour. On drying, however, the perfume resembles that of musk.

On looking over the table of contents one is surprised at the number of animals of all classes which apparently still furnish part of the armamentarium of the French practitioner. We had hoped that such substances as the dried blood of the wild goat, bezoar (intestinal concretions from ruminants), the *os cordis* of the ox, eyes of lobsters (gastroliths), etc., had been relegated to an obsolete pharmacy, and we hope that the descriptions of many of these have been added merely to increase the size of the volume. The book evidences a great amount of labour on the part of the author, and we regret that he was not spared to see his work issued from the press.

Purulent Nasal Discharges: their Diagnosis and Treatment. By HERBERT TILLEY, M.D., B.Sc. Lond., F.R.C.S. Eng., Surgeon to the Throat Hospital, Golden Square; Lecturer on Diseases of the Nose and Throat, London Post-Graduate College and Polyclinic. London: H. K. Lewis. 1901. Price 4s. net.

THE subject with which this little work deals is a small one, but it is one of considerable importance. Apart from the local pain and discomfort often associated with purulent nasal discharge, the general health is apt to suffer more or less seriously while the case remains untreated. Rhinology has made great advances in the past ten years, but probably the increase in our knowledge, and in the treatment, of accessory cavity disease has done more than anything else to prove that rhinology is a living and progressive science. Among various workers in this field Dr Tilley has earned the right to be recognised as an authority on this class of disease.

The book contains chapters on purulent discharge in infancy, in the exanthemata, associated with foreign bodies, etc., but its chief interest will be found in the part devoted to the accessory cavities. The descriptions of these are clear, and the methods of treatment, operative and otherwise, are fully discussed. In the course of an excellent account of the radical operation for antral empyema, we notice that it is recommended to rub pure carbolic acid into the cavity. We would merely caution our readers that we have seen this followed by considerable discomfort, owing to the ease with which the excess of acid may find its way into the pharynx.

It is a capital little book, which we cordially recommend to our readers.

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Laryngeal Phthisis or Consumption of the Throat. By RICHARD LAKE, F.R.C.S., Surgeon Laryngologist, North London Hospital for Consumption; Surgeon, Metropolitan Throat and Ear Hospital, and Royal Ear Hospital, etc. London: Rebman, Limited. 1901. Price 7s. 6d. net.

THERE is plenty of evidence in both the lay and medical press of the great interest shown, at the present time, in all that has to do with tuberculosis. We are glad, therefore, to welcome a book from an English source written from the laryngologist's standpoint. Dr Lake's little work is, as he points out, not so much a treatise on the subject as a record of results obtained from the careful study and treatment of a large number of cases. The methods of treatment advocated are sound, and his results are such as to encourage the practitioner to persevere in his attempts to cure, or at least alleviate the sufferings so often associated with this disease.

The situation of the active disease is shown, in an interesting table, to be the arytenoids, or the arytenoid space in more than twice the number of cases in which the epiglottis, or vocal cords, is the site of the attack. The author is an advocate for the surgical treatment of laryngeal phthisis, in suitable cases. In this we agree with him, in so far as a limited number of carefully selected cases is concerned. Much, however, depends on the selection of the suitable cases, along with an early diagnosis. Unfortunately it is too often the case that the laryngeal condition is not investigated until the disease is advanced, and such treatment is then to be deprecated.

The book is nicely got up, of a handy size, and is enriched by some excellent coloured plates. The author's meaning is sometimes obscured by awkward and inelegant phrases, but in spite of this the subject is presented in such a practical way, that we have pleasure in commending the book to all interested.

Annual Report of the Medical Officer of Health of the City of Edinburgh for the year 1901.

THIS report is both comprehensive and suggestive. It describes fully the public health experience of the year, and forms a valuable summary of the local incidence of disease. The census revealed a satisfactory rate of increase of the population, but Sir Henry Littlejohn views with apprehension the diminution in the number of houses let at a rental below £10, since this in all probability involves overcrowding rather than increased prosperity. Edinburgh enjoys no exemption from the decline

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in the birth-rate, elsewhere so prominent, and in 1901 this rate was only 24·99, a figure lower than in any previous year. It is noteworthy that the proportion at birth of males to females was also exceptionally low, 1020 to 1000. In a future report it is desirable that reference should be made to the causes of the decline of the birth-rate. Few points in public health are more important to the welfare of the country. The illegitimate births show a much larger percentage reduction than the legitimate, a fact not brought out in the report owing to the method of stating the former as a proportion of total births. The death-rate for the year was 17·76, and would have been less but for the fact that the zymotic death-rate was twice as high as in the previous year. This rate owed its magnitude to the prevalence of whooping-cough and measles. Attention is called to the preventable mortality among illegitimate as compared with legitimate infants, the infantile mortality figure reaching 274 in the former as contrasted with 132 in the latter.

The compulsory notification of phthisis is again urged upon the authorities, and a valuable table is given showing the prevalence and case mortality of the diseases notifiable under the local Act of 1879, and covering the twenty-two years of its existence. Henceforward notification will take place under the Infectious Disease Notification Act.

The prevalence of typhus fever in an area condemned as unfit for habitation, but not yet depopulated, emphasises the medical officer's recommendation for the reconstruction of the district.

The incidence of diphtheria on otherwise healthy districts rather than on the more insanitary areas, suggests that in the execution of the sanitary works of dwelling-houses improvement is still attainable. The spread of diphtheria by milk was reasonably suspected in connection with one source of supply.

During the year the prevalence of small-pox in Glasgow caused the Edinburgh authorities to undertake extensive re-vaccination for protection from the disease. Few cases occurred in the city, and it is properly insisted that the time has come to render re-vaccination compulsory, as in Germany. The report shows the value to the community of the City Hospital, and the populace should recognise the fact that typhoid fever and diphtheria are less fatal in cases treated in the hospital than in those treated at home.

Sir Henry Littlejohn commends the excellence of the bacteriological reports from the laboratory of the Royal College of Physicians, and points out the extreme value to the city of this work, and the low cost at which so great a gain has been provided.

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The Life of St Luke. By EDWARD CLAPTON, M.D., F.R.C.P. Pp. 80. London: J. & A. Churchhill. 1902. Price 1s. 6d. net.

THE author has evidently carefully studied in the original the third gospel and the Acts of the Apostles. By an examination of verbs and pronouns used he endeavours to ascertain Luke's position at the time of writing, *e.g.* Luke records that the parents of Jesus went to Jerusalem, and on their return came (not went) to Nazareth. He concludes, therefore, that Luke was resident in Nazareth at the time of the incident. While there is much which is doubtful, the author states a fair case for his surmises. He devotes several pages to a consideration of malaria and of demonic possession. He is apparently not at one with Hippocrates, who rejected belief in supernatural diseases. The book is full of interest, well-written, and easily read.

Guide to the Microscopic Examination of the Eye. By Professor R. GREEFF, Berlin. Translated from the Second German edition by Dr HUGH WALKER of Glasgow. Pp. 171. London: Rebman, Limited. 1901. Price 5s. net.

WE gladly welcome an English edition of this valuable little work on the microscopic examination of the eye. It was originally published in response to many repeated demands from colleagues and former pupils, and contains the essence of the instruction Professor Greeff was accustomed to give to his microscopic class. The methods found to be most generally useful in dealing with the histology of the eye are described in a clear and thorough manner.

The student will find the work a most admirable and reliable guide in his laboratory work.

Elementary Ophthalmic Optics. By J. HERBERT PARSONS, F.R.C.S. J. & A. Churchill.

THE term "elementary" as applied to this book is apt, we think, to lead to misconceptions. In his preface the author states that the book is intended to supply the student of ophthalmology with all the optics necessary for an intelligent knowledge of the subject. The book, as is also to be gathered from the preface, is more theoretical than practical, but the bearings of the varied optical problems on practical ophthalmology are kept fairly well in view. This is specially seen in the chapters dealing with the ophthalmoscope and with ametropia.

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The proofs and methods of demonstrating the optical principles involved do not appear to us specially lucid or simplified. The author, however, claims that only a very elementary mathematical knowledge is required to follow them.

Haab's Atlas of Ophthalmoscopy. Translated from the third German edition by G. E. DE SCHWEINITZ, M.D. W. B. Saunders & Co.

THIS atlas has already won a well deserved popularity. The price and the formidable size of most ophthalmoscopic atlases have greatly limited their sphere of usefulness. In spite of its small size this hand atlas will bear comparison with most of the large standard atlases. Prof. Haab has shown a most excellent judgment in the selection of illustrative cases, and those diseases of most importance to teacher and student receive full attention, not one but many typical cases being figured. The plates are all drawn from the inverted image; and while a little detail is thus sacrificed, the artist has succeeded in giving very faithful and life-like pictures of the fundus in health and disease. In all, the atlas contains no less than 152 chromo-lithographs. The pathology of the common diseases is illustrated in a clear and instructive fashion, and this adds considerably to the usefulness of the book. The introductory chapter on the use of the ophthalmoscope, skiascopy, etc., does not seem to be required, as every text-book goes over this ground at least as thoroughly. We have found the atlas of great assistance in teaching and can heartily recommend it.

Physiological Laboratory, London Hospital Medical College. Collected Papers No. 1. Arranged by LEONARD HILL, M.B., F.R.S. 1897-1900.

THE volume contains a series of reprints from various journals, of papers issuing from the Laboratory. A considerable number deal with the Circulation. These have mainly been carried on by Dr Hill himself, and deal with the influence of gravity, sleep, rest, work, bathing and chloroform. Two papers by Robert Hutchison deal with the Thyroid; another paper deals with Chloride metabolism in Pneumonia; and another with Petroleum Emulsion. The effects of ligation of the cerebral arteries occupy two papers; and one deals with the cerebro-spinal fluid in the human subject. The whole volume is a valuable one, and the collection of these papers is distinctly useful.

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A Synopsis of Surgery. By R. F. TOBIN, F.R.C.S.I. Second edition. Pp. 270. London: J. & A. Churchill. 1902. Price 6s. 6d.

THIS is a series of leaflets containing a synopsis of the author's lectures published in book form and interleaved for the convenience of students. It will undoubtedly be found useful by students attending Mr Tobin's class, but it is doubtful if it will have a much wider circulation. A feature of these leaflets seems to be the reporting in considerable detail of typical cases. This and the connected character of the observations distinguish it from the ordinary tabular form of leaflets which most lecturers distribute to their classes. Naturally many important details are omitted, and on the other hand statements as regards treatment, etc., are made not infrequently which are dangerous without the qualifications which the lecturer doubtless interpolates in his systematic course of instruction. There are no illustrations, but several charts are given to illustrate the varieties of temperatures.

Hare-Lip and Cleft-Palate. By R. W. MURRAY, F.R.C.S., Surgeon; DAVID LEWIS, Northern Hospital, Liverpool, late Surgeon, Liverpool Infirmary for Children. Pp. 29. London: J. & A. Churchill. 1902. Price 3s.

THOSE who have had a limited experience in this important branch of plastic surgery will derive some useful hints from this brochure, which directs attention to those details which the author has found to be of special value.

The fourth week is the age at which hare-lip is recommended to be operated upon, and preference is given to Mr Edmond Owen's operation. We are glad to see that the author never uses hare-lip ("Hair-lip" according to the printer) pins. To prevent the recurrence of flattening of the nose, a button suture is used to approximate the ala of the nostril to the cartilage of the septum.

In dealing with a double hare-lip complicated with a projecting intermaxillary bone, we are surprised to find no mention of Bardleben's method, a procedure which, in our opinion, gives superior results to those obtained by the methods recommended by the author.

The operation recommended for cleft-palate is that which is usually practised in this country. The figure introduced to illustrate it possesses the almost invariable fault of not carrying the lateral incisions far enough back. The author has come to

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the conclusion that it is not advisable to operate during the first few months of life; he prefers the second year. The volume is well illustrated with photographs showing different varieties of hare-lip both before and after operation.

The Scottish Medical and Surgical Journal, Limited

THE statutory annual meeting was held at 34 Charlotte Square on Monday, May 27th.

Dr Joseph Bell (Chairman of Directors), in moving the adoption of the report, said that although the account showed a small debit balance, this was largely a matter of accounting. Actually the Journal had been increasingly successful; their receipts from all sources had increased, and the promise of still further increase had amply justified their more liberal expenditure, which accounted for the small deficit.

The report was unanimously adopted; the retiring Directors (Drs Clouston, M'Kenzie, Johnston, and Mr Hodsdon) and the Auditor (Mr G. A. Robertson) were re-elected. Votes of thanks to the officials and to Mr Annandale for the use of his room erminated the proceedings.

Notes on Foods, Drugs, etc.

Messrs Wand, of Leicester, have forwarded us samples of their soluble pills and capsules; these comprise Blaud's, both round and oval, the latter gelatine coated. The coating is smooth and perfect, and the contents break down readily.

These are the days of specialism, and a firm which devotes itself specially to the manufacture of pills is likely to produce more perfect products than those to whom pills are only a part of their business. They have also sent us tablets of phenacetin and sulphur, which are convenient in size, and readily disintegrate, therein differing from some which require a hammer to reduce them to powder.

Their list contains no fewer than 1300 varieties of pills, so that it is almost impossible to seek in vain for any ordinary combination. We think it is rather a pity they should have concluded their catalogue with a list of "little" pills. "Little liver pills, little alterative pills, little antibilious pills," even though the formulæ are given, are more familiar to us on the advertising boards alongside railway tracks than in a catalogue for the use of the medical profession.

All Communications—including **BOOKS** *for* **REVIEW** *and* **EXCHANGE JOURNALS**—*are to be addressed to* THE EDITORS, 7 *Manor Place, Edinburgh.*

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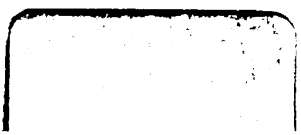

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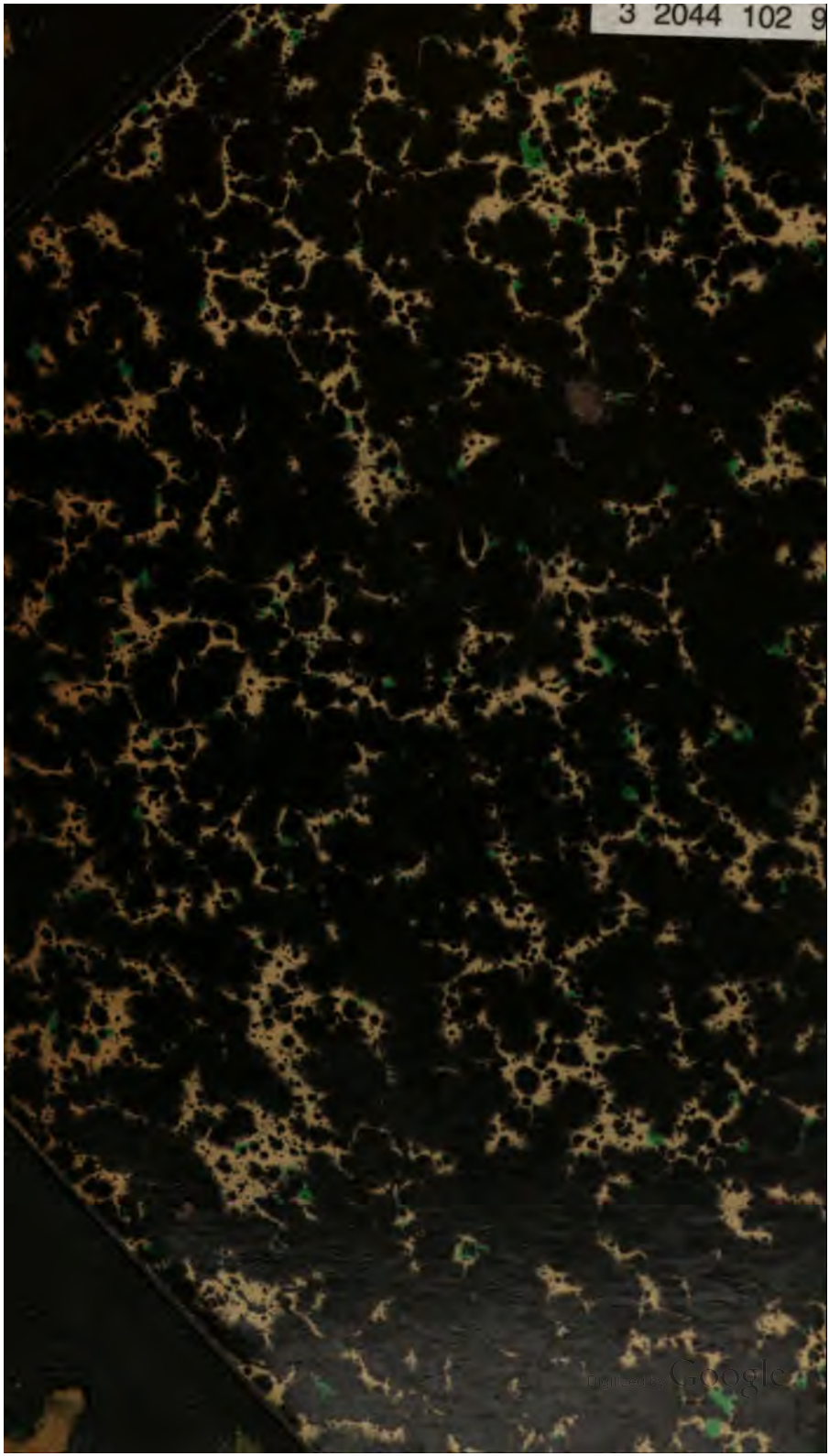

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